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The Influence of Bank Specific and Macroeconomic Factors on the Profitability of Listed Ghanaian Banks

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Abstract: From 2011 to 2021, the study examines the effects of macroeconomic and bank-specific factors on the profitability of Ghana's listed banks. The study looked at how banks' profitability factors affected their performance metrics, return on equity (ROE) and return on assets (ROA), using a panel data regression model. The results show that bank performance is significantly impacted by both internal and external economic factors. This gives regulators, investors and bank managers important information to use when making decisions to improve financial stability in Ghana's banking industry. The study also demonstrates the crucial relationship between macroeconomic variables and bank profitability metrics, providing empirical support for strategies aimed at creating a stable and lucrative banking environment in Ghana.

Keywords*:* Banks profitability, macroeconomic indicators, banks specific indicators, commercial banks, Ghana.

1. INTRODUCTION

Instead of merely depending on their function as money marketers or sector intermediates, banks in complex economies must prioritize the advancement of economic development (Allen & Carletti, 2012). In many different areas of the economy, they play a crucial role in directing deposits and paying off debt. An economy's sustainability is largely dependent on the efficiency and viability of its

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financial system. A country's economic standing is a reflection of the quality of its banking system (Mbilla et al., 2021). The resilience and steadiness of a nation's banking sector is essential to its economic expansion and advancement. One of the service areas supporting the expansion of the Ghanaian economy is the banking industry. It is essential for capital mobilization, employment, and the transfer of other resources (Yakubu, 2016).

The banking sector has changed significantly in recent years in an attempt to achieve stability, and it is still evolving and changing as a result of new laws and regulations. The industry has also grown significantly since the Financial Industry Adjustment Programme (FINSAP) was introduced in 1988 as a component of the Economic Recovery Programme of the 1980s (Owusu-Antwi, 2011). FINSAP was established in an effort to address problems with low profitability, a lack of innovation and technology, a lack of competition and inadequate liquidity in Ghana's banking sector (Sena et al., 2021; Abisuga et al., 2019).

In 2018, the Bank of Ghana (BoG) collapsed some banks while others were consolidated due to some liquidity challenges. The implementation of this recapitalization regulations have caused changes in the competitive landscape and sparked concerns about how to identify profitability factor and how these elements may affect bank profits to redirect the focus of industry players to these profitability factors. According to (Dadzie, 2017), external variables such as GDP, inflation rate, interest rates and banks internal elements significantly affect financial performance of banks elsewhere. It is however unclear if the above factors contribute to banks financial success in Ghana (Dadzie, 2017). This study is therefore instituted to identify and examining the variables influencing Ghanaian banks' profitability with data spanning from 2011 to 2021.

In order to achieve the study goals, the following research questions are required to be addressed;

- What internal elements affect the financial success of Ghanaian listed banks?
- What are the major external factors affecting Ghana's listed banks' profitability?

2. EMPIRICAL REVIEW

The Paris-based European Banking Authority (EBA) offers a noteworthy analysis of the factors influence the performance of banks worldwide. The results demonstrate that internal bank features and external banks conditions have a significant impact

on financial institutions' profitability indicators. Notably, the results also shows that smaller banks are frequently linked to lower tax rates, lower deposit interest rates, and higher levels of leverage compared to their larger counterparts, suggesting that differences in taxation and regulation between countries may be a major factor in the differences in the development of banks.

The importance of unique bank features including asset quality and managerial effectiveness as key factors influencing bank profitability outcomes has been highlighted in historical assessments, such as the work of Athanasoglou et al. (2008). The specific factors that affect bank profitability in Ghana have been the focus of academic investigations. While Aboagye et al. (2008) highlighted the implications of external indicators such as GDP growth and inflation rates, Abor's (2005) research identified capital adequacy, asset quality and management efficiency as the essential factors of banks' financial success.

By evaluating the internal and external components that affect the financial success of publicly traded banks in Ghana's financial industry, the current study builds on the groundwork laid by earlier research. The knowledge gained from this study clarifies the complex interactions among these different elements and how they all work together to affect the performance of banking organizations in Ghana.

Independent Variables

Bank-Specific (Internal) components

Capital Adequacy Ratio (CAR): One important financial indicator that banks and regulatory bodies use to evaluate a bank's capital strength is the Capital Adequacy Ratio (CAR). Its definition is the capital-to-risk-weighted-assets (RWA) ratio of a bank. By ensuring that banks have adequate capital to withstand possible losses, CAR protects depositor money and supports financial stability (Greuning and Bratanovic, 2020). Tier 1 capital and Tier 2 capital are the two primary parts of CAR. The bank's core capital which is made up of reported reserves and equity capital is included in Tier 1 Capital. According to the Basel Committee on Banking Supervision (2019), it is regarded as the most dependable and accessible type of capital for absorbing losses. Subordinated term debt, hybrid instruments and revaluation reserves are examples of supplemental capital that makes up Tier 2. Tier 2 capital offers a buffer against losses even though it is less dependable as compared to Tier 1 capital (Hull, 2018). As a safeguard against financial instability, CAR is essential to banking regulation. It protects depositors and upholds trust in the financial system by guaranteeing

that banks can withstand a fair amount of loss before going bankrupt. Regulatory authorities, such as central banks, use CAR as a measured to monitor and control the risk exposure of banks (Greuning and Bratanovic, 2020).

In his 1995 study, Berger explores the nexus between bank capital and performance, particularly the impact of capital sufficiency on bank performance in US banks. The study findings demonstrate a greater capital adequacy ratio (CAR) boosts profitability by offering a strong buffer against losses. .

Bokpin (2013) investigated how capital requirements affected Ghanaian banks' profitability and found that a larger CAR increased stability and confidence, which in turn improved profitability.

Research has shown that CAR has a significant impact on a bank's performance. A greater CAR demonstrates a better capital base, which can bring about an increased investor confidence and less funding costs. However, maintaining a high CAR can also mean that banks are holding excess capital, which could otherwise be used for lending and other profitable activities. This trade-off between safety and profitability is a key consideration for bank management (Kosmidou, 2017).

CAR is also linked to the broader concept of financial stability. During financial crises, banks with higher CARs are better positioned to withstand shocks and continue their operations without needing government bailouts. The global financial crisis of 2007-2008, had shown the importance of CAR buffers, leading to the introduction of more stringent capital requirements under the Basel III framework (Blundell-Wignall & Atkinson, 2012).

$$\text{CAR is calculated as} = \frac{TOTAL\ SHAREHOLDER'S\ EQUITY}{TOTAL\ ASSETS}\ X\ 100$$

Deposit to Asset Ratio

A higher deposit-to-asset ratio has a beneficial influence on profitability, according to Mensah et al. (2014), who looked into the factors influencing bank profitability in Ghana. This highlights the importance of deposits as a dependable source of funding.

The factors influencing interest margins and profitability among commercial banks across different nations were examined by Demirguc-Kunt and Huizinga (1999). According to their research, banks around the world that have a greater deposit-to-asset ratio typically enjoy the advantages of a more reliable and affordable

funding sources. One important financial indicator that shows the percentage of a bank's total assets financed by client deposits is the deposit to asset ratio. Because it sheds light on a bank's funding structure and its preference for more reliable customer-generated deposits over other more erratic funding sources like wholesale borrowing, this ratio is important. In general, a more secure funding source that is less vulnerable to market swings and liquidity crises is indicated by a greater deposit to asset ratio.

The Deposit to Asset Ratio is often used as a metrics of a bank's liquidity and sustainability. Banks that rely heavily on deposits are generally considered to be in a stronger liquidity position since deposits are less likely to be withdrawn on masse compared to other forms of short-term funding. This makes the bank less vulnerable to liquidity crises and can contribute to overall financial stability.

In the context of regulatory oversight, a higher Deposit to Asset Ratio is often seen as favorable, as it indicates that a bank is less dependent on external borrowing and has a more stable source of funding. This stability is crucial, especially during periods of financial stress, as it can help the bank maintain its operations and meet its obligations without resorting to emergency measures.

The Deposit to Asset Ratio also has implications for a bank's profitability and operational strategy. Banks with a high Deposit to Asset Ratio may benefit from lower funding costs, as deposits typically offer lower interest rates than other forms of funding. This can enhance the bank's net interest margin, contributing to overall profitability. However, an excessively high ratio might also suggest that the bank is overly conservative and may not be fully utilizing available funding opportunities to maximize returns. It is measured by; DAR= $\frac{TOTAL\ DEPOSITS}{TOTAL\ ASSETS}\ X\ 100$

Bank Size

Ansah-Adu et al. (2011) investigated the factors that influence bank success in Ghana and came to the conclusion that bigger banks typically make more money. The advantages of economies of scale and increased market power are responsible for this. In a similar vein, Sufian and Habibullah (2009) examined the variables affecting Chinese banks' profitability. According to the authors, a bank's profitability is positively and significantly impacted by its size. These banks are able to improve profitability metrics like ROE and ROA by reducing their operational costs per unit, thanks to the efficiency that comes with economies of scale.

Non-performing Loans (NPL)

Quartey and Afful (2014) investigated the multifaceted effects that non-performing loans (NPLs) exert on the operational success of banks situated within the Ghanaian financial sector and found that elevated ratios of non-performing loans substantially diminish the overall profitability of these banking institutions thereby underscoring the critical necessity for the implementation of robust and effective credit risk management strategies to mitigate these adverse impacts.

Kithinji (2010) observed, higher ratios of non-performing loans has a detrimental influence on the financial success of banks, primarily due to the increased in financial burden imposed by the necessity for higher levels of provision for anticipated loan losses, which ultimately hampers the overall financial performance of these institutions. NPL is calculated by; NPL= $\frac{TOTAL\ NON-PERFORMING\ LOANS}{TOTAL\ LOANS}\ X\ 100$

Net Interest Margin

Abor (2005) determined the intricate relationship between the capital structure of publicly listed organizations in Ghana and its consequential effects on their overall profitability. While the research encompasses a diverse array of firms operating within the Ghanaian market, it particularly identifies that specific variables pertinent to banks, notably the net interest margin (NIM), play a pivotal role in shaping profitability outcomes which are quantitatively assessed through key performance metrics such as ROE and ROA. Furthermore, the study underscores the critical observation that an elevated net interest margin serves to markedly enhance financial success metrics of banks operating in Ghana, thereby accentuating the vital necessity for these financial institutions to proficiently manage their interest rate spreads in order to optimize their financial performance.

Athanasoglou et al. (2008) conducted an extensive investigation into the various factors that significantly influence the profitability of banking institutions within the context of Greece, meticulously examining a range of critical elements including but not limited to, the net interest margin (NIM) and the prevalence of non-performing loans, while also taking into account both industry-specific dynamics and broader external conditions that may exert an impact. The comprehensive study yielded findings that indicated a robust positive nexus between the net interest margin and the overall profitability of banks operating in Greece, thereby implying that an increase in the net interest margin is likely to result in enhance ROE and ROA, which are key indicators of financial performance.

Owusu-Antwi (2010) examined the effects of macroeconomic variables on the performance and financial success of Ghanaian banks. Based on the research, bank profitability is positively impacted by GDP growth since economic expansion increases lending activities and lowers credit risk, which raises ROE and ROA. By allowing banks to modify interest rates on loans and deposits, moderate inflation was also proven to have a favorable impact on profitability. High inflation, however, can lower profitability by raising operating expenses and lowering actual returns. Furthermore, the analysis demonstrated that higher real interest rates have a beneficial impact on bank profitability by expanding the difference between lending and deposit rates, which raises ROE and ROA and improves returns on earnings.

NIM is calculated as; $NIM = \frac{TOTAL\ INTEREST\ INCOME - TOTAL\ INTEREST\ EXPENSES}{TOTAL\ ASSETS} X\ 100$

INDEPENDENT VARIABLES

Macroeconomic Components

Inflation (INF): This phenomenon pertains to the velocity at which the aggregate price level for a wide array of goods and services experiences an upward trajectory, ultimately resulting in a reduction of the purchasing power held by consumers and economic agents. A state of moderate inflation can prove to be beneficial for banking institutions, as it typically leads to an elevation in nominal interest rates, thereby augmenting the interest rate margins that these financial entities can command, which in turn significantly enhances their overall profitability and financial performance. Higher inflation on the other hand can lead to economic instability and increase the risk of loan defaults, which can have a negative impact on performance (Perry, 1992).

Real Interest Rate (RIR): The nominal interest rate that has been inflation-adjusted is the real interest rate. Real and nominal interest rates are divided into two categories. While the real interest rate is modified to account for inflationary effects, the nominal interest rate does not. A more accurate indicator of borrowing costs and bank returns is the real interest rate (Alper and Anbar 2011).

The real interest rate significantly affects bank performance, according to Alper and Anbar (2011), who looked at the effects of macroeconomic and bank-specific factors on banking performance in Turkey between 2002 and 2010. They came to the conclusion that improved bank performance is correlated with higher real interest rates. Changes in interest rates also have an impact on the amount of interest received, which has a direct impact on banks' performance.

Gross domestic Product Growth (GDP): GDP growth quantifies the rise in a nation's production and economic output. By creating favorable economic conditions that encourage lending and lower credit risk, positive GDP growth typically increases bank profitability. On the other hand, bank profitability may suffer during economic downturns (Athanasoglou, Brissimis, & Delis, 2008).

Dependent Variables

Return on Assets (ROA): ROA is computed as total net profit divided by net book value of assets. Financial regulators use it to predict structural changes and measure market trends, but it is most commonly employed to assess bank performance. Additionally, by showing how successfully managers use the bank's resources, ROA aids in the evaluation of managerial effectiveness. A greater ROA suggests that the bank is successfully utilizing its resources to generate better earnings, hence increasing financial success (Brissimis and Delis 2008).

Return on Equity (ROE): ROE calculates net income as a proportion of equity held by shareholders. It assesses a bank's ability to turn a profit from equity investments. According to Flamini and Schumacher (2009), a high return on equity (ROE) indicates that the bank is successfully turning shareholders' equity into sizable profits, which may increase profitability and inspire investor confidence. ROE is calculated as: (NET PROFIT)/(SHAREHOLDER S EQUITY) X 100.

CONCEPTUAL FRAMEWORK

The conceptual framework elucidates the intricate relationships between various bank-specific factors, which are unique to individual financial institutions and macroeconomic variables that pertain to the broader economic environment, all of which collectively influence financial performance metrics of listed Ghanaian banks. In this analytical discourse, ROA and ROE emerge as the primary dependent variables employed in the evaluation of profitability measures, serving as critical indicators that reflect the financial performance and operational efficiency of these banking entities. Below illustrate the nexus among the variables.

3. METHODOLOGY

3.1. Sample and data collection

To address the study goals, the authors used secondary data in their analysis. For the study analysis, audited yearly financial statements from each of the eight banks listed

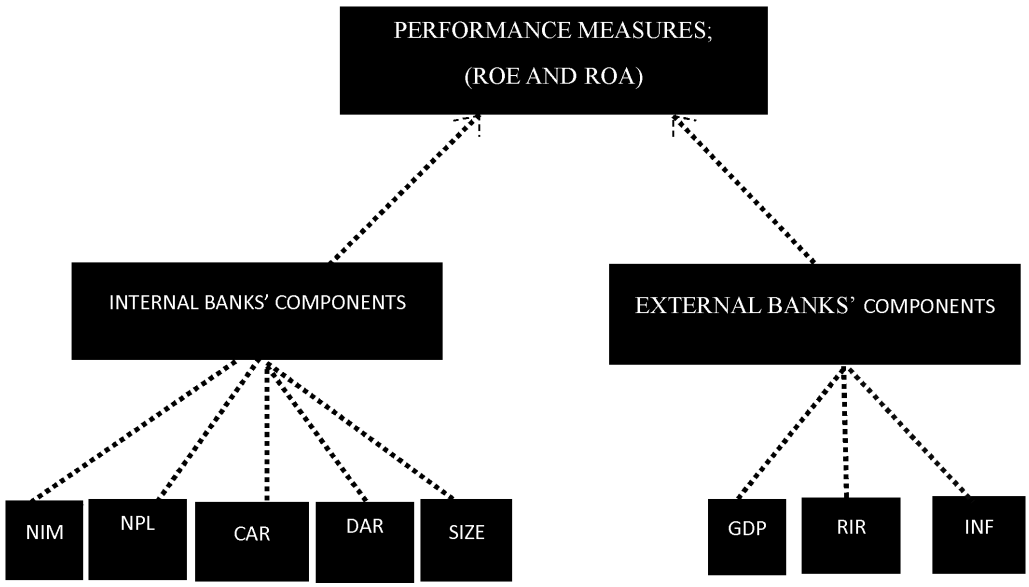

Figure 1: Constructs of the Authors

on the Ghana Stock Exchange (GSE) were downloaded from the banks' websites and extracted. These banks' data span from 2012–2021 was analyzed using the panel data regression research technique, because it produces more accurate estimates than cross-sectional or time series data models (Chronopoulos et al., 2013), this method was selected. Once more, the research model is suitable since it examines a number of variables whose values were derived from secondary sources and are verifiable. The method is also favored because it is rigorous, efficient and clear, enabling comprehensive statistical analysis, generalizing results, drawing logical inferences from numerical data and making it simple to compare various studies (Dietrich & Wanzenried, 2011).

3.2. Model for Data Analysis

The links between two important performance measures (ROA and ROE) and eight significant factors are examined in this study using a panel data regression approach. The model offers a thorough examination of the relationships between each independent variable and the dependent variables. Since all the variables used in the research are speculative, the random effect technique was used to check the robustness of the data to serve the purpose of the investigation. The analysis's study models are shown below.

$$ROA=\beta+\beta Bsize+\beta CAR+\beta NPL+\beta DA+\beta NIM+\beta INF+\beta GDP+\beta RIR+\mu$$

$$ROE=\beta+\beta Bsize+\beta CAR+\beta NPL+\beta DA+\beta NIM+\beta INF+\beta GDP+\beta RIR+\mu$$

Where:

μ denotes the error term

β represents the intercept

4. RESULTS AND DISCUSSIONS

Descriptive Statistics

The descriptive statistics are shown in Table 1, which provides an overview of the data used in the analysis. The table also demonstrates the relevance of the independence variables against the dependent variables.

Table 1: Descriptive Statistics

Variable	*Total Count*	*Mean*	*St. Dev*	*Mini*	*Max*
ROA	80	2.360	0.7117	1.10	4.40
ROE	80	17.500	6.0470	2.00	35.80
Bsize	80	2.159	1.5210	0.50	12.00
DA	80	73.880	47.8800	5.33	487.89
NIM	80	5.897	5.5890	0.92	51.93
NPL	80	5.487	1.5950	2.50	10.10
CAR	80	17.411	2.8560	11.60	25.40
INF	80	11.576	3.8010	7.07	17.46
GDP	80	6.310	3.5910	0.40	14.00
RIR	80	8.460	2.8280	3.90	12.50

From Table 1, the mean values of the dependent variables (ROA and ROE) are 2.360 and 17.500 and their corresponding standard deviations are 0.7117and 6.0470 respectively. The implication of the results is that, listed banks in Ghana are able to generate about 2.360 and 17.500 Ghana cedi from their investment in asset and equity capital respectively. This will lead to a profit generation of 4.40 and 35.80 Ghana cedi for the study period. The losses these banks may incur ranged from 1.10 Ghana cedi to 2.00 Ghana cedi. DA has a mean value of 73.880 and standard deviation of 47.8800 while NIM has a Mean score of 5.897 and standard deviation 5.5890. CAR and NPL had means scores of 17.411, 5.487 and

their respective standard deviations of 2.8560, 1.5950 for the study period. Bsize also has a mean score of 2.159 and its standard deviation is 1.5210. With regards to the macroeconomic variables (INF, GDP and RIR), their means scores are 11.576, 6.310 and 8.460 and respective standard deviations are 3.8010, 3.5910 and 8.460 respectively for the research period. The means values of the study indicate all the constructs considered in the research are essential to listed banks financial success in Ghana for the period as their profit generation ranged from 4.40 Ghana cedi to 487.89 Ghana cedi. The study results are consistent with studies by Adams and Mehran (2005); Andres and Vallelado (2008); Demirgüç-Kunt and Huizinga (1999) and Ghosh (2015), who conducted their studies across various parts of the globe. It implies therefore that, stakeholders within the industry should implement strategies regarding the above variables discussed as their contributions to banks financial success in Ghana and Sub-Sahara Africa is significant.

4.2. Pearson Correlation among the Variables

Table 2's Pearson correlation matrix illustrates the connections between a number of internal and external variables and bank profitability metrics, ROA and ROE.

Table 2: Pearson correlation among the variables

	ROA	*ROE*	*Bsize*	*DA*	*NIM*	*NPL*	*CAR*	*INF*	*GDP*
ROE	0.856***								
Bsize	-0.129	-0.122							
DA	0.065	0.091	-0.088						
NIM	0.334**	0.365**	-0.066	0.920***					
NPL	0.401***	0.409***	0.147	0.053	0.193				
CAR	0.500***	0.530***	0.288*	0.103	0.316**	0.432***			
INF	0.081	0.054	-0.110	-0.136	-0.094	0.005	0.070		
GDP	0.121	0.073	-0.200	0.059	0.069	-0.166	-0.371**	-0.541***	
RIR	0.175	0.141	-0.336**	-0.030	0.030	-0.166	-0.322**	0.296**	0.547***

Table 2 illustrates the relationships among the variables used in the study. This was done to eliminate highly correlated variables used for the study analysis. It is observed that the correlation among the variables is weak and therefore appropriate for this study. Among the variables, only NIM and DA have high correlation value (0.920). The rest of the variables have correlational values ranging from positive/ negative figures of 0.005 to 0.530. The study findings demonstrate there is no

multicollinearity issue among the variables or if there is any available is weak and does not affect the variables utilized for the study analysis.

Regression Analysis of the Variables

Table 3 presents the regression models that analyze the impact of both external and internal factors on financial performance of Ghanaian listed banks. ROA and ROE are used as the performance measures in these models, whereas the external variables are RIR, INF and GDP while, the bank-specific variables are Bsize, NIM, CAR and NPL.

Table 3: The nexus between the independent and dependent variables

	Model 1	*Model 2*
Variables	ROA	ROE
Constant	0.045600	2.72600
Bsize	-0.090760*	-0.80900*
DA	-0.015191***	-0.13688***
NIM	0.143280***	1.31160***
NPL	0.077650*	0.60330*
CAR	0.082620**	0.67340**
INF	0.060370*	0.16010
GDP	0.097490*	0.37310
RIR	-0.046210	-0.04070
Observations	80	80
R-squared	.624	.621
F-value	10.120	9.210

The regression analysis results for Model 1 and 2 are illustrated in Table 3, which examined the nexus among the variables. The adjusted R-square of the performance measures (ROA and ROE) are 0.624 and 0.621 respectively. The implication of this result is that, the model is able to explain about 62.4% and 62.1% of the study sample of ROA and ROE respectively which are the performance measures in the study. The F statistic values during the period were 10.120 and 9.210 for models 1 and 2 respectively. The models significance was demonstrated by the F-statistics as contained in Table 3 above. The results suggest that the association between Bsize and DA and banks' financial measure, ROA is negative and insignificant. This implies that, these two independent variables do not contribute to listed banks financial success in Ghana during the period. Yakubu (2016) obtained similar results when

the author conducted a study on the determinants of banks financial performance in Ghana. The nexus between the rest of independent constructs and ROA is positive but insignificant. This means that, though these identified variables contribute to banks' performance measure, ROA, their contributions is negligible confirming a study result by Kosmidon (2017). However the nexus between NIM, NPL and CAR and ROE, one of the performance measures is positive and significant. By implication these variables are the reasons for listed banks financial performance in Ghana. Studies by (Hull 2018; Mensah et al. 2014 and Quartey and Afful 2014) claimed that higher CAR demonstrates higher capital based which in effect can lead to higher investor confidence. Higher DPL according to Quartey and Afful is detrimental to a firm's financial success while higher NIM is an important element of firms' profit according to Abor (2005). In summary, equity capital holders should invest more in firms that implement strategies attempting to improve these banks performance components if they want their interest to be safeguarded. The macroeconomic indicators regarding both profitability measures are positive and relevant to banks' performance in Ghana except RIR which demonstrates a negative nexus with listed banks financial performance. The policy implications regarding these external banks' profit factors are that, policy framework is needed to increase economic expansion which could facilitate bank performance and stabilize the macroeconomic environment that allows for achievable inflation rates in Ghana. This will assist bank managers create more products for higher profits.

5. CONCLUSION

The goal of the study was to identify the elements that influence the profitability of Ghanaian listed banks by taking into account the performance of both internal and external banks. The findings show that listed banks' value creation during the time can be attributed to the fundamental aspects of their performance that have been recognized in the literature. Higher NIM indicates better profit and highlights the significance of interest income and expenses in the bank's overall performance, according to the study's findings. The findings once more demonstrate a positive and significant correlation between CAR and ROE, indicating that banks with higher capital have a stronger ability to withstand financial shocks, resulting in a more stable and lucrative operations. The study results showed a positive and substantial association between NP and banks' profits, although other literature identified a strong negative relationship between NPL and profitability. The results suggest

that implementing aggressive lending practices could lead to a flourishing banking industry. According to the results, Bsize has a detrimental effect on profitability, indicating that economies of scale lose their advantages when inefficiencies persist past a certain point. With respect to macroeconomic indicators, the nexus between GDP and banks profitability is positive, implying that an economy's expansion increases bank business and significantly reduces default risk, resulting in a higher level of profits that can be generated in a number of ways. A bank's profit is impacted by the inflation rate since banks profit from efficient inflation rate control. The data supports the notion that banks profit from low inflation as businesses must contend with rising nominal interest rates, which raise lending margins. Since higher real interest rates can lower overall returns on assets and allegedly raise borrowing costs and default risk, even when they improve the return generated by the entire portfolio, RIR has a negative correlation with banks' financial success. According to the policy's implications, stakeholders should support the improvement of interest margin management techniques to guarantee long-term profitability, uphold a strong capital adequacy ratio to protect against financial instability, and foster an environment in which banks can make money, including low inflation and faster economic growth.

5. Declarations and Conflict of Interest

Ethical Approval and Consent to Participate: Not applicable.

Consent for publication: Not applicable.

Data Availability of Data and Materials: Upon reasonable request, the associated author is willing to make the datasets generated and/or analyzed during the current work available.

Competing Interests: The writers disclose that they have no conflicting interests that could influence the content of this article.

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