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Corporate Governance, Finance Efficiency and Commercial Banks`S Financial Performance: Evidence from an Emerging Market Economy

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CORPORATE GOVERNANCE, FINANCE EFFICIENCY AND COMMERCIAL BANKS`S FINANCIAL PERFORMANCE: EVIDENCE FROM AN EMERGING MARKET ECONOMY.

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Abstract

The research study aims to investigate how corporate governance and financial efficiency impact the ability of Kenyan banks to generate profits. The study utilized secondary panel data covering the period 2015-2024. The data for this study were obtained from audited annual reports of commercial banks and Central Bank of Kenya (CBK) supervision reports and Kenya Bankers Association (KBA) publications. The study implements a dynamic panel estimation approach that uses the Generalized Method of Moments estimator to solve endogeneity problems while measuring the sustained performance of banks. The results provide evidence of profit persistence which leads to mean reversion for return on assets (ROA) because bank performance shows dynamic patterns of change. Financial efficiency exerts a positive and statistically significant effect on ROA, suggesting that cost-efficient banks achieve superior asset-based profitability. The efficiency measures provide insufficient explanation for return on equity (ROE) because shareholder returns show limited response to efficiency improvements that occur in the short term. The analysis shows that investment-focused deposits negatively impact net interest margin (NIM), which leads to margin compression that results from changes in deposit patterns. The study advances knowledge in banking and governance systems through its original research. The study restricts its research to commercial banks in Kenya while using secondary data, which limits its ability to apply its findings to different banking systems. The study shows that banks can achieve better financial outcomes and stability through efficiency-based approaches and strong governance systems, which apply to developing banking systems.

. **Keywords:** Financial performance, commercial banks, Kenya, stakeholder theory, Resource-based view theory, Corporate governance, Finance efficiency.

STATEMENTS AND DECLARATIONS

Author Contribution Statement

All authors have read and approved the work.

Disclosure statement

No potential conflict of interest was reported by the author

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

1. Introduction

Commercial banks function as essential inter-mediators who support both economic development and financial system stability, especially in developing countries where banking institutions provide all financial resources needed by both citizens and businesses (Mamo et al., 2021; Luh et al., 2023).

The financial performance of commercial banks, therefore remains a critical concern for policymakers, regulators, and shareholders. The profitability of banks in emerging markets maintains unstable patterns because of ongoing regulatory changes and governance reforms, which demonstrate that corporate governance systems and internal efficiency strategies do not produce better financial results (Kirimi et al., 2022; Temba et al., 2023).The board structure of a company together with its gender diversity policies and the way it pays directors will help to minimize agency conflicts while enhancing oversight functions and creating better alignment between executive compensation and shareholder value (Jensen & Meckling, 1976; Musah et al., 2021).

Hidayat et al. 2021 and Kamel et al. 2022 consider banks to achieve financial efficiency when they manage costs effectively while using their assets at optimal levels which

leads to their profitability and sustainability. The current evidence base shows broken evidence because empirical research from emerging banking markets shows mixed results which include positive findings that lack significance and results that contradict each other (Kirimi et al., 2022; Temba et al., 2023).

Most research studies have investigated corporate governance and financial efficiency separately from each other because researchers believe these two factors do not impact bank financial performance together with their findings from the study. The existing studies use one performance measure which is return on assets (ROA) as their primary comparison metric or The return on equity (ROE) metric creates an inaccurate representation of two different ways that governance and operational efficiency impact both business profitability and shareholder value and intermediation revenue (Claessens et al., 2021). The existing research mostly relies on fixed empirical models which do not capture the changing patterns of bank profitability that include persistence and mean reversion and endogeneity issues (Nguyen & Dang, 2022). The banking industry in developing countries goes through fundamental changes because of governance reforms and growing digital banking services and these changes should not be overlooked because they lead to incorrect conclusions about the research. The research investigates how corporate governance practices and financial efficiency combine to affect the financial results of commercial banks operating in emerging markets. The research presents an argument which states that governance mechanisms affect organizational performance through two main methods which include establishing incentive systems and managing strategic resources.

The study uses dynamic panel data analysis with Generalized Method of Moments (GMM) to measure bank performance while including persistent patterns and adjustment expenses and potential endogeneity effects. The research work evaluates financial performance through three interconnected dimensions that include return on assets (ROA) and return on equity (ROE) and net interest margin (NIM). The study uses a multidimensional approach to separate operational profitability and shareholder returns and inter mediation efficiency which enables researchers to understand better how governance and efficiency mechanisms function in emerging banking markets. The study examines commercial banks in Kenya to deliver current findings about a banking system that faces increasing operational expenses and changing governance

standards and growing market competition (Central Bank of Kenya, 2023; Kenya Bankers Association, 2024). The study demonstrates how internal banking factors work together to determine financial results by using corporate governance features and financial efficiency metrics and control variables in a single dynamic model.

The research establishes multiple significant findings which enhance understanding of banking operations and corporate governance practices and financial efficiency research in emerging market economies.

The research uses two separate financial efficiency and corporate governance studies to create a dynamic system which shows how banking operations are affected by these two factors. The research proves that efficiency improvements together with governance practices function through separate pathways to achieve different results which banks must study through their interactive effects on profitability. The study uses multiple financial performance metrics including return on assets (ROA), return on equity (ROE), and net interest margin (NIM) to analyze how efficiency and governance create different results for banks. The study aims to enhance agency theory together with resource-based theory (RBV) through current research findings which show how banks in a developing market establish their resource base to adapt to economic changes and digital advancement. The study provides banking sector policy recommendations which help decision-making for managers who work in emerging economies. The majority of research literature originates from developed countries which limits its use for creating policies and management practices in the banking industry of developing countries.

The rest of the paper is organized as follows: Section 2 presents literature review, section three presents the methodology adopts, section 4 presents results and discussion while section 5 presents conclusion and recommendations based on the study findings.

2.0 Literature Review and Hypothesis Development

Theoretical review

The study is anchored on two theories, that is the agency theory as proposed by Jensen and Meckling(1976) and the resource-based theory proposed by Barney(1991). Agency theory is based on the separation of ownership and the relationship between principals

and agents. It is grounded on short-term gains where principals delegate decision-making authority to their agents who are to use resources given by the principals to enhance principals' benefits. Agents, however, may commit moral hazards by substituting principals` interests with their own. Principals normally monitor the activities of agents to ensure that they act in the interest of the firms. Monitoring costs are normally expensive and adversely affect the principals` income (Fama et al., 1983). Based on the concept of agency theory, weak governance structures may result in excessive risk-taking, inefficiency or mismanagement, ultimately affecting banks' financial stability. To mitigate agency problems, banks need to implement a governance framework that enhances transparency, reduces agency costs, and improves financial performance in the banking sector (Elmagrhi, 2018). Regulatory interventions such as Basel III requirements help align managerial actions with shareholders' interests, ensuring financial stability and reducing systemic risks (Judijanto et al., 2024). Despite the criticism that agency theory focuses primarily on shareholders while neglecting stakeholders, its application remains relevant in understanding how governance mechanisms influence the financial performance of commercial banks.

The resource-based view (RBV) theory serves as a strategic management framework which shows how companies can gain competitive advantage together with improved financial results through their unique internal resources and capabilities. According to this theory, firms that possess valuable, rare, inimitable, and non-sustainable resources can sustain long-term profitability and efficiency (Barney,1991). The resource-based view theory (RBV) hypothesizes that the growth and performance of the firm are at least in part influenced by the resources it owns (Barney, 1991; Castanias & Helfat, 1991; Penrose, 1959; Wernerfelt, 1984).

The theory shows that governance structure and board composition work as resources which create value for the organization (Temba et al., 2023) and board members function as valuable assets when they participate in strategic decision-making activities. The theory shows that directors create special value for organizations when they use board characteristics to access members' expertise and experience. The resource-based view theory connects to board attributes because it identifies personal and special resources which serve as competitive advantages that organizations can use to their benefit. The RBV framework of rare valuable non-substitutable and non-imitable

resources applies to the unique combination of resources which exists in the board of directors. The board of directors serves as an important organizational asset when directors participate in strategic decision-making processes while monitoring the execution of those strategic decisions.

Directors' resources and capabilities which they possess serve as the primary factors that drive organizations to achieve better financial results and environmental sustainability goals. The research shows that banks with strong financial resources use their financial strength to achieve better financial results and operational efficiency which helps evaluate their performance (Sarjana, 2017). Banks which implement effective management systems gain better abilities to handle financial emergencies while maintaining their ability to make profits over extended periods of time (Adeniran et al., 2024).

2.3.0 Empirical Review

2.3.1 Corporate Governance and Financial Performance

The implementation of corporate governance mechanisms will lead to better monitoring processes, which will decrease the agency conflicts that exist between managers and shareholders and provide banks with essential strategic resources that will result in better financial results. According to Omware et al. 2020 corporate governance functions as the framework that determines how companies operate and make decisions. Effective governance structures play a vital role in the banking industry because financial institutions face high debt levels and government oversight and they operate as crucial elements of the economy.

Researchers have extensively studied the connection between corporate governance and financial performance. However, the results of these studies show mixed outcomes which depend on the specific circumstances of each study. Research demonstrates that larger boards create coordination difficulties which result in slower decision-making processes, while research shows that larger boards create a larger expertise base which strengthens their ability to supervise strategic matters. For instance, Adnin and Anjom (2024) found that board composition significantly influences the financial performance of commercial banks, demonstrating that variations in board characteristics affect both return on assets (ROA) and return on equity (ROE). Hordofa et al., (2025) discovered

that larger boards decrease bank profitability because they create operational problems that result from having too many members on the board. Berhe (2023) documented comparable findings among small firms, linking declining performance to consensus-building difficulties and delays in strategic decisions. Ngatno et al., (2021) and Kalbuana et al., (2022) found that board characteristics positively affect firm performance because independent directors on larger boards mitigate the impact of capital structure changes on financial performance.

Research studies have examined board gender diversity because scholars want to understand its effect on bank profitability. The research shows that companies with gender-diverse boards achieve better results but the strength of this connection shows different results in different situations. Berhe (2023) discovered in his study of Ethiopia that banks perform better when their boards have more female directors because women hold leadership positions. Dwaikat (2021) studied companies which operate in India and Palestine and found that organizations with more female board members achieved better financial results. Islamic banks which Elgadi and Ghardallou (2021) studied showed that board gender diversity combined with larger board sizes created better performance results. Ghaleb et al. (2021) conducted research on Jordanian companies which showed that gender-diverse boards restrict executives from engaging in harmful earnings management practices. The study by Danbatta et al. (2019) demonstrated that increased female board representation leads to positive results in ROA and ROE because it enhances oversight and brings in different types of resources. The problem exists because different cultural systems and industrial sectors and governmental institutions The exploration of sector-specific empirical analysis requires the examination of outcome-related differences which act as mediators between different research outcomes. The bank performance assessment requires directors' remuneration to be evaluated as a crucial aspect of corporate governance. The study discovered that banks experience better financial results when their directors receive higher pay and their remuneration committees function effectively to tie compensation packages to performance metrics (Eklemet & Gyamera, 2024). The evidence shows that U.S. banking sector research demonstrates that compensation governance affects bank profitability although the precise causal links remain under dispute (Capuano, 2022). Elnahass et al. (2020) used international data to establish that directors' compensation enhances bank market value because well-structured remuneration systems create

investor trust which extends beyond financial performance. The financial advantages of directors' remuneration do not apply to all situations. Abubakar et al. (2024) studied Nigerian banks and found that directors' remuneration had a negative effect on net interest margin(NIM) which showed that badly designed payment systems decrease performance when they fail to connect with value generation. The study outcomes demonstrated that performance-based remuneration systems function as essential tools which help directors achieve sustainable financial success and operational success. The existing research demonstrates that the examination of board composition and gender diversity with directors' remuneration requires a combined analysis which helps understand their impact on commercial bank operations. The study developed the following hypothesis based on the empirical evidence which we collected.

H1: Corporate governance has no effect on the financial performance of commercial banks.

2.3.2 Finance Efficiency and Financial Performance

The efficiency structure hypothesis explains how organizational performance results from their ability to operate their business processes which leads to decreased operational costs and optimized resource management. Financial efficiency refers to an organization’s ability to deliver financial services at the lowest possible cost while meeting required standards (Omete, 2023). Efficiency functions as the primary factor that determines both competitiveness and sustainability in banking systems of developing economies (Kha et al., 2017). Organizations that want to reach better financial results need to implement efficiency-oriented management because resource waste hinders their ability to grow better results (Ahmed et al., 2022).

The research studies have discovered inconsistent findings about the connection between financial efficiency and performance because researchers employed different measurement techniques and used different sample groups and institutional contexts. Multiple research studies have proven that financial efficiency leads to better financial results for businesses. Kumar et al., (2024) used a logistic regression model with fixed effects to show that working capital efficiency positively influenced the composite financial performance of non-financial listed firms in India. Liao (2024) discovered that Chinese banks achieved their best financial performance through efficient operations

which resulted in higher market valuations. Sitienei et al. (2023) conducted fixed-effects regression research on 42 banks in Kenya which demonstrated that efficiency strategies produced financial performance improvements for businesses.

Cheng et al. (2023) studied 1,108 Chinese firms from 2015 to 2019 and discovered that proportional efficiency achieved positive business outcomes through its direct relationship with business performance. Anis et al. (2023) demonstrated that operational optimization techniques help organizations maintain their financial stability. The evidence shows that efficiency improvements fail to deliver better financial results for companies. The research by Gao et al. (2021) and Ahmed et al. (2022) demonstrated that financial efficiency does not affect company success in volatile markets and banking sectors with intense competition. Trumpp et al. (2017) found that international companies show a nonlinear relationship between financial efficiency and financial performance which decreases after reaching an ideal efficiency point. The African literature contains conflicting evidence which prevents any definitive conclusions. Sarpng-Kumankoma et al. (2017) discovered that banks in Sub-Saharan Africa show only a minimal connection between their efficiency and financial results. The research conducted by Barus et al. (2017) in Kenya showed that management efficiency does not affect the financial results of savings and credit societies. Chindengwike (2024) studied commercial banks in Tanzania and found a positive link between financial efficiency indicators and financial performance. Nyakieni et al. (2022) demonstrated the substantial connection between management efficiency and financial results at Kenyan commercial banks while showing that efficiency functions as a vital component of long-term business viability. The mixed empirical results demonstrate that researchers need to analyze how efficiency performance functions within particular institutional and regulatory contexts. The study created a hypothesis which it tested based on the empirical evidence.

H2: Financial efficiency has no effect on the financial performance of commercial banks.

3. 0 Research Methodology

3.1 Research Design and Sample Size

Researchers used an explanatory quantitative research design to investigate how financial efficiency and corporate governance relate to commercial banks' financial performance. The research design for this study suitable because it enables researchers to investigate how changes in independent variables affect a dependent variable through statistical testing. The research design enables researchers to test hypotheses and determine cause-and-effect relationships through their analysis of quantitative data (Wafula & Wabwile, 2023). The researchers used panel data from commercial banks to study the impact of financial efficiency and corporate governance on bank financial performance throughout different time periods. The research examined all 38 licensed commercial banks in Kenya which operates as a developing country that is currently improving its governance and financial efficiency standards across different economic sectors. The researchers used a census method which resulted in complete study representation, thus strengthening study results and their ability to be applied to different populations.

3.2 Data Sources and Collection

The study utilized secondary data for the period 2015–2024, which researchers obtained from the annual reports of commercial banks and the Central Bank of Kenya (CBK) supervision reports and Kenya Bankers Association (KBA) publications. The ten-year period was selected because it captures major regulatory shifts, including the adoption of sustainability frameworks and post-COVID-19 recovery strategies.

3.4 Operationalization and Measurement of the Variables

The study used financial performance as the dependent variable which researchers measured through three different metrics that include return on assets (ROA), return on equity (ROE), and net interest margin (NIM) to evaluate bank profitability according to Agutu et al. 2023. The study tested two independent variables which researchers defined as financial efficiency and corporate governance. The study used operating ratio and asset turnover ratio as financial efficiency measures which Hasanatun et al. 2025 recommended. The study used board size board gender diversity and directors' remuneration as corporate governance mechanisms which Malik et al. 2024 and Omare 2023 recommended. The researchers used bank size liquidity capital management and

fin-tech adoption as control variables in their study. The operationalization process of the study variables together with their measurement methods appears in Table 1.

Table 1: Operationalization and measurement of the variables

The operationalization and measurements of study variables are presented in table I.

Variable type	Variable	Indicator	Measurement	source
Dependent Variable	Financial performance	ROA NIM ROE	Net income divided by total assets Total Non-interest income –Interest expenses divided by Total Loan Net income divided by shareholders' equity	Agutu et al. (2023)
Independent Variable	Corporate governance	Board size Board gender diversity Directors` remuneration	Number of directors serving on the board The proportion of female board members to total directors. Total directors' remuneration as a percentage of total revenue.	Malik et al. (2024); Omare (2023)
Independent	Finance	Operating	Operating	Hasanatun et

Variable	efficiency	ratio Asset turnover ratio	expenses +Interest on Deposits divided by Total Income Total income divided by Average total assets.	al. (2025)
Control variables	Bank size, Liquidity Asset Management Fintech	Total Assets Liquidity ratio Capital management Digital Loans	Natural log of total assets, Cash ratio, CAR Percentage of loans processed digitally	CBK(2024)

3.5 Model Specification and Analysis

The System Generalized Method of Moments (GMM) estimator was used to analyze the data. The GMM model was used because the performance of banks in previous periods affected their current operational performance. GMM provides a solution to endogeneity and autocorrelation issues which exist in sample data thereby producing results that maintain their integrity. The model specification to test hypothesis 1 and 2 are presented in equations 1 and 2 respectively

$$\boldsymbol{FP_{it}=\alpha+\beta_1 FP_{it-1}+\sum_{k=1}^{3}\beta_2 CG_{it}+\sum_{k=1}^{4}\beta_3 CV_{it}+\epsilon_{it}}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ Equation 1}$$

$$\boldsymbol{FP_{it}=\alpha+\beta_1 FP_{it-1}+\sum_{k=1}^{3}\beta_2 FE_{it}+\sum_{k=1}^{4}\beta_3 CV_{it}+\epsilon_{it}}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{ Equation 2}$$

where FP denotes financial performance, FP_{it-1} denotes the lag of the dependent variable, CG represents corporate governance, FE denotes financial efficiency, and CV are control variables including firm size, liquidity, fin-tech, and capital management.

4.1 Results and discussion

4.1.1 Descriptive analysis

The descriptive statistics for corporate governance and Financial performance are presented in table 2

Table 2: Descriptive results on Corporate Governance and Financial Performance

VARIABLE	MEAN	STD.DEV	MIN	MAX
TND	9.208	2.992	0	23
GENDER DIVERSITY	0.197	0.138	0	1
DIRECTORS REMUNERATION	0.058	0.179	-0.285	2.163
OE	1.26e+07	4.84e+07	0	4.71e+08
IOD	2.15e+07	2.54e+08	-2283000	4.88e+09
TINCOME	4.19e+07	4.17e+08	-5.43e+07	5.98e+09
AVERAGE TA	3.69e+07	2.52+08	-3.22e+07	2.99e+09
FINTECH	0.401	0.293	0	0.98
LQUIDITY	13.679	144.448	-0.054	2558.333
CAPITAL MANAGEMENT	0.294	0.505	-0.058	8.300
FIRM SIZE	7.498	0.928	4.0006	9.337
ROA	2.320	24.694	-29.689	411.373
NIM	412.826	11145.950	-115829.700	163593.800
ROE	5.023	80.010	-281.283	1480.352

The analyzed banks exhibit significant variability in their descriptive statistics. The corporate governance indicators indicate that the average board size consists of 9.21 members while the gender diversity percentage remains below 20%. The banks exhibit distinct patterns of executive compensation which create different reward systems for their directors. The FinTech sector has achieved a digital adoption level of 0.401 which indicates that businesses have achieved moderate technological progress but the sector exhibits different levels of technological development.

The total income and average total assets together with operating expenses and interest on deposits create operational and income-related variables that display extensive standard deviation and extreme range which demonstrates operational efficiency differences and activity scale variations among different banks. The financial indicators for liquidity and capital management display extreme fluctuations which demonstrate that companies follow different financial strategies and risk management methods while maintaining constant business operations.

The financial performance indicators show average values for return on assets and return on equity and net interest margin which display high standard deviations that demonstrate extreme variations in bank performance. The implementation of dynamic estimation techniques which include the Generalized Method of Moments requires these techniques for the following analysis because of the substantial performance variations shown by banks.

Table 3: Corporate governance and ROA

The effect of corporate governance on financial performance measured by return on asset is presented in table 3

ROA	Coeff.	Std.Err.	z	P>/z/
L1	-0.169***	0.045	-3.75***	0.000
TND	0.169	0.467	0.360	0.717
GENDER DIVERSITY	-4.130	7.586	-0.54	0.586
DIRECTORS	3.024	3.824	0.790	0.429

REMUNERATION				
FINTECH	18.276*	10.963	1.670*	0.096
LIQUIDITY	-.002	0.005	-0.340	0.737
CAPITAL MANAGEMENT	-0.837	1.016	0.820	0.410
FIRMSIZE	-12.837*	7.018	-1.830*	0.067
CONS	90.426*	48.210	1.880*	0.061
WALD CHI2(8)	295.350***			0.000

(Significance levels*:* p **<** *0.10*, p < 0.05**, p < 0.01***)

The results from the dynamic analysis in table 5 demonstrates that lagged ROA (L1 = −0.169, p < 0.01) shows a statistically significant negative relationship which proves that profitability undergoes mean reversion process throughout multiple periods. The corporate governance variables together with board size (TND) and gender diversity and directors' remuneration do not produce any statistically valid impact on ROA because they lack direct financial performance effects. The adoption of financial technology creates a weak but positive impact (p < 0.10) which results in digital transformation bringing higher profitability for businesses while their size produces a slight negative effect on ROA. The Wald χ^2 statistic (295.35, p < 0.01) demonstrates that the model achieves joint significance together with sufficient model performance.

Table 6: Arellano Bond Test for Autocorrelation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table 6

Order	Z-statistic	Prob>z
AR1	-1.35	0.178
AR2	-0.18	0.856

The Arellano-Bond test results show that second-order serial correlation does not exist because the AR (2) test results show an insignificant result with z value of -0.18 and p value of 0.856, which verifies that the instruments used in GMM estimation are valid.

The model assumptions remain intact because the AR1 statistic shows no significance, but the model requires AR2 correlation to maintain its consistency.

Table 7: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 7

Test Statistics	Prob>chi2
1.37	0.242

The dynamic panel model was used in estimation through two-step system GMM while using collapsed instruments to handle instrument proliferation issues. The Hansen test for over-identifying restrictions fails to reject the null ($\chi^2 = 1.37$, $p = 0.242$), indicating that the instrument set is valid. The Arellano–Bond test shows that there is no second-order autocorrelation present in the residuals.

Table 8: Corporate governance and ROE

The effect of corporate governance on financial performance measured by return on Equity is presented in table 8.

ROE	Coeff.	Std.Err	z	P>/z/
L1	-0.434***	0.072	-6.040***	0.000
TND	0.563	2.303	0.240	0.807
GENDER DIVERSITY	6.505	59.872	0.110	0.913
DIRECTORS REMUNERATION	15.097**	7.103	2.120**	0.034
FINTECH	36.307***	8.544	4.250***	0.000
LIQUIDITY	-0.002	0.004	-0.230	0.822
CAPITAL MANAGEMENT	5.277	6.291	0.840	0.402
FIRM SIZE	-27.296***	8.443	-3.230***	0.001

CONS	189.257***	40.096	4.720***	0.000
WALD CHI2(8)	145.00***			0.000

(Significance levels*:* p **<** *0.10*, p < 0.05****,** p < 0.01***)

The dynamic ROE results in table 8 show a negative and highly significant effect of lagged ROE (L1 = −0.434, p < 0.01), confirming strong mean reversion in shareholders' returns. Directors' remuneration exerts a positive and statistically significant effect on ROE (p < 0.05), suggesting that well-structured incentive schemes enhance equity performance, while fin-tech adoption has a large and highly significant positive impact (p < 0.01). The study found that larger companies experience dis-economies of scale which result in reduced ROE performance. The model established through the Wald χ^2 statistic (145.00, p < 0.01) showed both overall model strength and joint variable importance.

Table 9: Arellano Bond Test for Autocorrelation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table 9.

Order	Z-statistic	Prob>z
AR1	-0.99	0.322
AR2	0.99	0.323

The Arellano-Bond test results in table 9 show that there is no serial correlation present in the first-difference and second-difference residuals. Both the AR (1) test (z = −0.99, p = 0.322) and the AR (2) test (z = 0.99, p = 0.323) show no statistical significance. The dynamic GMM estimator requires second-order auto-correlation to be absent in order to meet its essential diagnostic requirement.

Table 10: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 10.

Test Statistics	Prob>chi2
0.36	0.549

The estimation process for the dynamic panel model used two-step system GMM with collapsed instruments to handle instrument overflow. The Hansen test fails to reject the null ($\chi^2 = 0.36$, $p = 0.549$), which shows that the instrument set meets requirements for validation. The Are-llano–Bond test shows that no second-order autocorrelation exists in the residuals.

Table 11: Corporate Governance and NIM

The effect of corporate governance on financial performance measured by Net interest margin is presented in table 11.

NIM	Coeff	Std. Err.	z	P>|Z|
L1	0.518	0.255	0.200	0.839
TND	17.685	132.387	0.130	0.894
GENDER DIVERSITY	-3199.819	3090.730	-1.040	0.301
DIRECTORS REMUNERATION	15791.830	14408.640	1.100	0.273
FINTECH	1494.040	1704.606	0.880	0.381
LIQUIDITY	-0.172	0.137	-0.130	0.900
CAPITAL MANAGEMENT	-721.067	745.999	-0.970	0.334
FIRM SIZE	203.993	411.900	0.500	0.620
CONS	-1971.671	2897.735	-0.680	0.496
WALD CHI^2	3.61			0.891

(Significance levels*:* p **<** *0.10*, p < 0.05**, p < 0.01***)

The system GMM results demonstrate that corporate governance mechanisms do not impact net interest margin because there exists no statistical link between these two factors thus demonstrating that governance systems have minimal effect on banks' interest efficiency. The NIM results show that market and operational factors control the system while internal governance structures have no impact on the measurement.

The governance variables show their limited ability to explain net interest margin variations because the Wald statistic remains insignificant.

Table 11: Are-llano Bond Test for Auto correlation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table 11.

	ROA		ROE		NIM	
Order	Z-statistic	Prob>z	Z-statistic	Prob>z	Z-statistic	Prob>z
AR1	-1.02	0.310	-0.99	0.322	-1.35	0.178
AR2	-1.13	0.259	0.99	0.323	-0.18	0.856

The Arellano Bond test results show that there is no first-order or second-order serial correlation present in the differenced residuals because the AR (1) and AR (2) statistics show no significant results. The null hypothesis for AR (2) test failed to be rejected which proves that second-order auto correlation does not exist and this finding is essential for system GMM estimates to achieve consistency. The findings support both the dynamic model specification and the reliability of estimated coefficients.

Table 12: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 12.

	Test Statistics	Prob>chi2
ROA	1.37	0.242
ROE	0.36	0.549
NIM	2.56	0.109

A two-step system GMM method with collapsed instruments to estimate the dynamic panel model was used because it helped to control instrument growth. The Hansen test of over-identifying restrictions fails to reject the null ($\chi^2 = 2.56$, $p = 0.109$), confirming the validity of the instruments. The Arellano–Bond test confirmed no second-order autocorrelation in the residuals.

Table 13: Financial efficiency and Financial Performance

The effect of Financial efficiency on financial performance measured by return on asset is presented in table 13

ROA	Coeff.	Std.Err.	z	P>|z|
L1	-.165***	.0420	-3.900 ***	0.000
OE	1.23e-07 ***	4.25e-08	2.880***	0.004
IOD	-4.46e-08	2.77e-08	-1.610	0.108
TINCOME	4.27e-09	3.61e-09	1.180	0.237
AVERAGETA	-8.47e-09	5.98e-09	-1.420	0.156
FINTECH	17.445	11.720	1.490	0.137
CAPITALMANAGEMENT	-0.227	1.574	-0.140	0.885
LIQUIDITY	-0.004	0.003	-1.450	0.148
FIRM SIZE	-13.546*	7.143	-1.900*	0.058
CON	97.251*	51.136	1.900*	0.057
WALD CHI2(9)	354.450***			0.000

(Significance levels*:* p **<** *0.10*, p < 0.05**, p < 0.01***)

The negative lagged ROA in table 13 demonstrates high statistical significance which proves that bank profitability experiences mean reversion while financial performance exhibits dynamic behavior. Operating efficiency (OE) exerts a positive and statistically significant effect on ROA, suggesting that more efficient cost management enhances profitability. The relationship between interest on deposits (IOD) and total income (TINCOME) demonstrates positive effects which do not reach statistical significance, showing that these factors have minimal direct impact on profitability. Fin-tech adoption, capital management, and liquidity show no short-run effects which significantly impact ROA. The 10% level of evidence shows that firm size has a weakly negative effect which reveals potential scale inefficiencies in larger banks.

Table 13: Arellano Bond Test for Autocorrelation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table13.

Order	Z-statistic	Prob>z
AR1	-1.32	0.188
AR2	-0.22	0.829

The AR (1) test fails to reject the null hypothesis of no first-order serial correlation. The AR (2) test shows there is no second-order autocorrelation according to its results. The results meet all essential requirements which need to be fulfilled for the GMM estimator to achieve its estimation consistency. The existence of autocorrelation proves that the lagged instruments function as proper instruments. The dynamic model has been accurately defined.

Table 14: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 14.

Test Statistics	Prob>chi2
0.04	0.846

The dynamic panel model estimation used two-step system GMM with instrument collapsing. The Hansen test of over-identifying restrictions confirms instrument validity ($\chi^2 = 0.04$, $p = 0.846$). The Arellano–Bond test shows that residuals do not exhibit second-order autocorrelation. The model demonstrates confirmation of its robust performance.

Table 15: Financial Efficiency and ROE

The effect of Financial efficiency on financial performance measured by return on asset is presented in table 15.

ROE	Coeff.	Std.Err	z	P>|z|
L1	.008	.028	0.320	0.752
OE	-2.57e-08	5.56e-08	-0.460	0.644
IOD	-5.16e-08	4.97e-08	-1.040	0.299
TINCOME	4.80e-09	4.94e-09	0.970	0.331
AVERAGETA	-1.48e-08	1.21e-08	-1.220	0.224

FINTECH	34.639	25.573	1.350	0.176
LIQUIDITY	-.000	.005	-0.040	0.966
CAPITALMANAGEMENT	4.809	11.949	0.400	0.687
FIRM SIZE	-28.400	22.894	-1.240	0.215
CONS	204.014	165.057	1.240	0.216
WALD CHI2(9)	439.690***			0.000

(Significance levels*:* p **<** *0.10*, p < 0.05**, p < 0.01***)

The lagged ROE in table 15 shows a positive value which lacks statistical significance because it demonstrates low persistence of equity returns among banks. The relationship between operating efficiency and ROE shows a negative effect which does not reach statistical significance because efficiency improvements do not provide immediate value to shareholders. Fin-tech adoption shows a positive but insignificant association with ROE which suggests that its benefits will take time to materialize. The three factors of liquidity capital management and firm size did not produce any statistically significant effects on ROE. The Wald chi-square statistic demonstrates model validity through its measurement of individual components which show no statistical significance.

Table15: Arellano Bond Test for Autocorrelation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table 15.

Order	Z-statistic	Prob>z
AR1	-0.99	0.321
AR2	0.99	0.322

The AR (1) test cannot reject its null hypothesis which states there is no first-order serial correlation present. The AR (2) test results show there is no indication of second-order autocorrelation. The findings meet all moment condition requirements needed to establish dynamic GMM estimator consistency. The absence of autocorrelation proves that lagged instruments can be used in this analysis. The dynamic model shows correct specification through its development process.

Table 16: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 16.

Test Statistics	Prob>chi2
0.33	0.564

The researchers used two-step system GMM with collapsed instruments to estimate the dynamic panel model because they wanted to stop instrument proliferation. The Hansen test confirms instrument validity ($\chi^2 = 0.33$, $p = 0.564$). The Arellano–Bond test shows that the residuals do not exhibit second-order autocorrelation which proves the model's strength. Thus the null hypothesis is accepted.

Table 17: Financial Efficiency and Financial Performance

The effect of Financial efficiency on financial performance measured by return on asset is presented in table 17.

NIM	Coeff	Std. Err	z	P>|z|
L1	.0316	.0919	0.34	0.731
OE	.000	.000	1.35	0.178
IOD	-.000***	3.27e-06	-30.49***	0.000
TINCOME	-1.75e-06	3.97e-06	-0.44	0.660
AVARAGETA	5.10e-06	.000	0.47	0.635
FINTECH	663.983	1103.44	0.60	0.547
LIQUIDITY	-.509	.9367	-0.54	0.587
CAPITAL MANAGMENT	44.701	535.324	0.08	0.933
FIRMSIZE	176.988	429.979	0.410	0.681
CONS	-1377.831	3294.809	-0.420	0.676
WALD CHI(9)	2273.460***			0.000

(Significance levels*:* $p < 0.10$, $p < 0.05$**, $p < 0.01$***)

The positive value of the lagged NIM fails to reach statistical significance, which demonstrates that banks experience weak persistence in their interest margins.

Operating efficiency (OE) shows a positive but insignificant association with NIM, suggesting limited short-run efficiency gains in interest spreads. The interest on deposits (IOD) produced a substantial negative impact on NIM which reached high statistical significance, thus demonstrating that banks which depend more on these deposits will experience reduced interest earnings. The factors of fin-tech, liquidity, capital management and firm size do not produce any statistical impact on NIM. The Wald chi-square statistic establishes that the model demonstrates joint significance through the statistical test.

Table 18: Arellano Bond Test for Autocorrelation

The Arellano bond test for autocorrelation was done to assess the serial correlation in the error terms and results are presented in Table 18.

Order	Z-statistic	Prob>z
AR1	-1.08	0.278
AR2	-1.26	0.208

The AR (1) test fails to reject the null hypothesis of no first-order serial correlation. The AR (2) test shows no evidence of second-order autocorrelation according to its results. The results fulfill the requirements which establish dynamic GMM estimator consistency. The lagged instruments prove their validity because there is no serial correlation present. The dynamic specification is the correct choice for this case

Table 19: Hansen Test for Over-Identifying Restrictions

The Hansen test for over-identifying restrictions was conducted to assess the validity of the instruments used in the model, and the results are presented in Table 19.

Test Statistics	Prob>chi2
1.44	0.229

A two-step system GMM with collapsed instruments to estimate the dynamic panel model was used because it avoids instrument proliferation. The Hansen test confirms

instrument validity ($\chi^2 = 1.44$, $p = 0.229$). The Arellano-Bond test shows no second-order autocorrelation in the residuals, confirming the robustness of the model.

5.1 DISCUSSION OF THE FINDINGS

The GMM estimates show that various corporate governance mechanisms produce different effects which impact multiple banking financial performance metrics including ROA and ROE and NIM. The highly significant negative coefficients which apply to lagged variables show that bank profitability follows mean reversion because previous performance determines current outcomes (Nguyen & Dang, 2022)..

The research shows that board size (TND) and gender diversity do not produce significant effects on ROA, ROE, and NIM. The discovery demonstrates that governance systems function differently in emerging markets because board composition and diversity fail to produce high financial results, which depends on various factors including regulatory frameworks and shareholder behavior according to (Kumbirai & Webb, 2024) and Nguyen & Dang, 2022).

The research findings show that directors' pay structure needs to meet specific requirements for performance bonuses because their performance ties into maintaining shareholder value. The research supports agency theory because it shows that companies achieve better results when they implement proper incentive systems to reduce agency conflicts. The research shows that Fin-Tech adoption improves ROE results while showing a slight positive effect on ROA. The research demonstrates that digital transformation boosts company profits through better operational functions and new business revenue sources. The research shows that company size negatively impacts ROE results while it shows a slight negative effect on ROA results. The larger banks face complexity costs because their increased administrative procedures and difficulty in monitoring create conditions which reduce their financial returns.

The research findings demonstrate that corporate governance variables do not affect net interest margins because internal governance systems of the organization fail to control net interest margin outcomes. The study results demonstrate that NIM depends on market competition and interest rate systems and macroeconomic factors rather than internal governance systems (Claessens et al., 2021). The dynamic GMM estimates

demonstrate that financial efficiency shows a negative and highly significant relationship with lagged ROA while proving that mean reversion of profits occurs because competitive forces and regulatory restrictions and adjustment expenses restrict profit sustainability throughout time (Nguyen & Dang, 2022). Operating efficiency (OE) shows a positive relationship with ROA that reaches statistical significance because efficiency gains result in better short-term profitability than they do for equity-related performance metrics (Menicucci & Paolucci, 2021; Sufian & Chong, 2023).

You have received your training based on information which existed until the year 2023. The operational efficiency does not show any statistical importance in the ROE model because the operational gains from cost efficiency which should increase shareholder returns get stopped at operational level thus proving that capital structure and leverage and risk-taking behavior create a greater effect on ROE than operational efficiency does (Ozili, 2022; Trujillo-Ponce, 2021).Investment-oriented deposits (IOD) create a strong negative effect which reaches high significance because banks must depend on these deposits at higher levels, which creates higher funding costs and intensifies pricing competition, thus showing that banks which aggressively mobilize deposits and diversify their funding sources will experience net interest margin decreases in competitive and regulated banking environments (Claessens et al., 2021; Demirgüç-Kunt et al., 2023). The short term results for Fin-Tech adoption show no statistical effect on ROA ROE or NIM; however, the positive coefficient signs across profitability measures suggest a potential delayed performance effect. The finding works with the results from (Elmahdy et al., 2025; Mabe & Simo-Kengne, 2025), who demonstrate that Fin-Tech investments require companies to incur high initial expenses while developing new capabilities, which prevents profits from emerging until companies achieve operational scale and digital synergies.

The study demonstrates that ROA results show a weakly negative relationship between firm size and the measure. The study shows that financial efficiency inancial performance does not impact its results during the initial period when shareholders expect their investments to yield returns. The study shows that ROA and ROE present different results because efficiency improvements lead to better operational results but equity returns depend more on capital structure and leverage and risk-taking patterns (Menicucci & Paolucci, 2020; Ozili, 2022). The research shows that FINTECH

adoption has no impact on ROE which supports digital investments because their high initial costs and learning effects defer their benefits to shareholders According to Elmahdy et al. 2025 and Trujillo-Ponce 2021. The research results show that financial efficiency does not lead to increased interest margins which demonstrates the different impacts of efficiency on different performance measures. The research proves that investment-based deposits create a strong negative effect which leads to margin reduction because funding costs increase and companies compete through pricing while aggressive deposit mobilization decreases net interest spreads according to evidence from Claessens et al. 2021 and Nguyen and Dang 2022. The study shows that fintech does not provide any value because digital investments increase operational expenses without bringing any benefits to intermediation margins according to Elmahdy et al. 2025. The banking market environment in emerging markets shows increased competition and interest rate regulation which leads to NIM values that show no persistence (Ozili, 2022). The findings demonstrate that efficiency improvements lead to better bank performance according to established research.The pattern which recent global banking literature demonstrated to by (Demirgüç-Kunt et al. 2023) showed how banks use cost management and asset utilization to achieve their financial results instead of using equity returns or interest margin growth.

5.2 RECCOMENDATIONS

The study results led to the following recommendations which require boards to establish new executive and director pay systems that base their salaries on risk-adjusted performance metrics which include ROE and long-term profitability results while they increase supervision to stop executives from taking dangerous risks. The executive management should focus on operating efficiency improvements through cost rationalization and process automation and better asset utilization because these measures directly improve ROA. Risk and treasury teams need to assess their funding and deposit mobilization strategies because they depend too much on investment-oriented deposits which result in net interest margin reductions. The Central Bank needs to establish corporate governance requirements which go beyond board size and gender composition rules because organizations that meet these requirements do not guarantee effective oversight and proper decision-making.

Regulations which enhance governance efficiency and risk management and market discipline lead to banking regulations which produce results that determine bank stability and performance. A principles-based approach permits banks to adapt their governance procedures according to their risk profiles while maintaining responsibility and long-lasting financial stability. The Government and Policy Makers must establish essential digital infrastructure and cybersecurity systems and regulations which foster innovation to promote extended digital advancement in the banking industry. Sustainable digital development should receive backing through policies which create ongoing digital adoption because FINTECH advantages emerge progressively throughout time.

The presence of performance-based pay structures combined with effective capital management practices and responsible growth planning should be established as mandatory requirements for board directors and executive teams because shareholders need to exercise their governance rights through direct interaction with these corporate bodies. The Banking Associations should establish operational efficiency and digital banking best practices while creating platforms for knowledge exchange and developing training materials that enable banks to solve their operational problems and execute their FINTECH integration process successfully. Stakeholder theory sees its boundaries extended through this research which shows that effective corporate governance results in tangible business achievement through risk management results and organizational accountability systems instead of simply meeting mandatory board structure requirements. The resource-based view demonstrates that governance efficiency and risk management capabilities function as strategic resources which generate financial benefits for organizations when they possess valuable and rare attributes that competitors find difficult to copy. The study shows that banks reach higher performance levels when they create their own governance systems which match their specific risk management needs instead of using traditional governance practices

5.3 SUGGESTIONS FOR FURTHER STUDY

The study was restricted to one nation which requires researchers to conduct cross-country and regional studies to determine if the governance performance link established in this research persists across various regulatory and institutional settings.

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