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THE MODERATING EFFECT OF FIRM SIZE ON THE RELATIONSHIP BETWEEN ENVIRONMENTAL RISK AND THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

Financial institutions play a key role in spurring the growth of the economy. However, banks operate in a highly volatile environment which threatens their ability to achieve their desired goals. The purpose of this study was to establish the moderating effect of firm size on the relationship between environmental risk and the financial performance of commercial banks in Kenya.

The study was anchored on the growth of the firm theory. Longitudinal and cross-sectional research design was used. The population of the study was 42 commercial banks in Kenya. 32 purposively sampled commercial banks which had audited financial accounts for the years 2016 to 2021 were included in the study. Secondary panel data collected using an extraction tool validated by experts from banks and academia was analyzed using R statistical software version 4.3.2. Reliability of the data was ensured by using audited financial reports. Descriptive and inferential data analysis techniques were used. Mixed effects regression model to assess the moderating effect of environmental risk on financial performance of commercial banks showed that firm size significantly moderates the relationship between environmental risk and financial performance of commercial banks in Kenya. The number of branches shows a significant moderating effect in tier 3 banks compared to tier 1, where a higher number of branches negatively affects ROA (beta: -0.22, 95% CI: (-0.31 – -0.14), p-value: <0.01). The study concluded that there is a statistically significant moderating effect of firm size on the relationship between environmental risk and the financial performance.

INTRODUCTION

The domain of Financial Performance (FP) in commercial banks has been a major focus for management executives and researchers due to its critical role in organizational success. FP is generally understood as the ability of a firm to meet set financial goals, including profitability through effective and efficient use of resources (Amene, & Alemu, 2019; Baba & Nasieku, 2016; Karajeh & Ibrahim, 2017).

1.1 Environmental Risks

Businesses operate in a wider environment that comprises of the micro and macro environment. The macro environment encompasses political, economic, socio-cultural, technological, legal and environmental influences on organizations, utilizing the PESTEL framework of analysis. While the micro environment comprises of elements in a firms' immediate environment including suppliers, competitors marketing intermediaries, customers, human resource, organizational culture and structure and the publics. According to Taricha (2022), the macro environment and majorly social-cultural, economic, technological and political environmental factors have a significant effect on performance of firms. Taricha, (2022) recommends the need to keenly look into the macro environment at policy level to enhance firm performane.

Bwire, & Omagwa, (2019) asserts that environmental risk is, one of the risks that financial institutions must take into account when assessing new lending or investment. Erragragui (2018) confirmed that environmental strengths reduce debt costs, while environmental concerns increase debt costs. Environmental risk straddles a number of these risks. In

particular, it is a subset of credit, legal and reputation risk (Kobrin**,** 2022). The focus of this study was on economic risks, reputational risks and technological risks together with firm size.

According to Mengze and Wei (2015) a bank may suffer direct risk due to borrowers' legal liability to clean up pollution, indirect risk due to borrowers' cost escalation or revenue reduction resulting from stringent environmental policies, and reputational risk for its financing environmentally unfriendly firms or projects. This study operationalized environmental risk as the economic risk, technology risk and reputation risks that affect the financial performance of listed Commercial Banks in Kenya.

The size of the firm other than risk also affects its performance. This is because the larger the bank the more access it has to internal and external funding sources as well as changes in profit levels earned (Ningrum, 2017). The larger the bank the higher the likelihood of having more assets. Jekwam and Hermuningsih (2018) posit that firm size can be a good moderator on the effect of liquidity on the financial performance of a firm. The firm size depends on the total assets owned and the higher amount of the assets owned by the bank, the greater the bank's financial ability. Size is believed to have a greater influence on the profit earned by the bank. This implies that the larger the bank the higher the profits it will earn.

This study therefore sought to determine the relationship between environmental risk and financial performance of commercial banks in Kenya by combining various indicators of the micro and macro environment including economic risks, reputational risks and technological risks. It further sought to establish the moderating effect of firm size on the relationship between environmental risks and financial performance in Kenya.

1.2. Firm size

Firm size is the categorization of commercial banks by CBK according to weighted composite index which comprise; assets, number of deposit accounts, deposits, bank shareholding, and loan accounts to tiers one, two and three. CBK uses the tier system of classification where commercial banks have been classified in three tiers; tier1 comprising of large banks, tier 2 made up medium-sized lenders and Tier 3 composed of small-scale lenders, holding 49.9%, 41.7% and8.4%marketshares respectively CBK (2016).

Azhagaiah & Silambarasan (2014) in their study concluded that irrespective of the institution size, there is high volatility in the corporate leverage of these institutions. Olivia, Atahau, & Martono, (2022), reviewed the link between institution size and financial performance and concluded that large banking organizations enjoyed greater benefits compared to other organizations. Wahome, Memba, Muturi, (2015), investigated and empirically tested how firm size and risk affect capital structure and found that there was a significant relationship between firm size and capital structure. Appah, & Tebepah, (2021) found a positive and significant correlation between bank size and return on assets, indicating that larger banks tend to perform better financially. A study by Kinyua, Kiai, & Muriu, (2022) found out that bank size does not moderate the effect of internal equity on the net profit margin of lower-tier commercial banks in Kenya but does greatly affect that of tier 1 and tier two which are considered large firms.

1.3 Financial Performance of Commercial Banks

Wang & Sarkis (2017) defines financial performance as the ability of a firm to realize external and internal objectives.. Le, Shan, and Taylor (2020) says that it can be calculated using liquidity, return on equity (ROE), firm size and return on assets (ROA) .This study adopted return on assets and return on equity as parameters to measure financial performance of commercial banks.

1.4 Statement of the Problem

Commercial banks play a pivotal role the world over by bridging the gap between the economy's surpluses and deficits. The financial sector in Kenya, despite being generally resilient, has experienced significant challenges, particularly in the banking industry. A notable trend is the consistent decline in the Return on Equity (ROE) of commercial banks, which dropped from 29.8% in 2012 to 24.5% in 2016 (CBK, 2016). Furthermore, several mainstream banks, such as Imperial Bank, Dubai Bank, and Chase Bank, faced liquidity risks, corporate governance failures, and were placed under receivership between 2015 and 2016. This period also saw a rise in non-performing loans and credit risks, further complicating the performance of the sector.

Despite regulatory interventions, like the Banking Amendment Act of 2016, which capped lending rates and aimed to stabilize the sector, banks continue to face financial difficulties. This raises concerns about the industry's overall health, especially given the contrasting performance of a few thriving banks and many struggling ones.
Given that banks play a critical role in economic development, the declining performance, persistent financial challenges, and failure of key players indicate deeper underlying issues which if left unchecked could result into a rundown. Environmental risks, firm size, and other factors may significantly influence financial performance. While studies have explored the relationship between risk and financial performance, there remains a gap in understanding how firm size moderates the relationship between environmental risks and financial outcomes in the Kenyan banking sector. This gap necessitates further exploration to guide policy and strategy formulation aimed at mitigating risks and ensuring the stability and growth of commercial banks in Kenya

1.5 Objective
To assess the moderating effect of firm size on the relationship between environmental risk and the financial performance of commercial banks in Kenya.

1.6 Hypotheses of the Study
There is no statistically significant moderating effect of firm size on the relationship between environmental risk and financial performance of commercial banks in Kenya.

LITERATURE REVIEW
2.1The Theoretical Framework
The study was anchored on growth of the firm theory by Penrose (1959). This theory outlines fundamental principles that govern the efficient and profitable growth of companies. Penrose highlights the importance of managing a firm's resources effectively, focusing on productive opportunities and diversification strategies. The theory further identifies key relationships between a firm's resources, its potential for growth, and profitability.

2.2 Firm Size and Financial Performance
The bank size is a computation of logarithm of all the assets. Financial success of a commercial bank relies on the asset size, the bigger the size the higher the chances of expansion to other geographical areas which are unexplored and with minimal competition (Mwangi, 2018). According to Bwire & Omagwa (2019) a strategy that enhances a client bank's base, would lead to higher customer deposits.

Appah, & Tebepah, (2021) explored the relationship between corporate size and financial performance of all listed Nigerian deposit money banks from 2010 to 2019. Using an ex post facto and correlational research design, secondary materials, and primarily financial statements of the sampled banks and the Central Bank of Nigeria Statistical Bulletin gave rise to data used. The analysis utilized both descriptive and inferential statistics, with multiple regression analysis employed via a parsimonious error correction model. The findings revealed a positive and significant correlation between bank size and return on assets, indicating that larger banks tend to perform better financially. The study concluded that bank size positively influences the financial performance of deposit money banks, recommending that these banks should increase their assets and capitalization to enhance their lending capacity and overall financial performance.

The research by Abbasi, & Malik, (2015). Aimed at determining the moderating effect of firm size on the relationship between firm growth and firm performance through the test of hypotheses. The study employed cross-sectional data from 50 firms listed on the Karachi Stock Exchange, the study applied regression analysis after addressing data stationarity and resolving multicollinearity issues. The findings support the alternative hypothesis, indicating that firm size moderates the relationship between firm growth and performance. These results suggest that management should consider firm size alongside growth to enhance performance. Future research directions were also outlined. Corvino, Caputo, Pironti, Doni, & Bianchi (2019) in a study to investigate the moderating relationship between relational capital and firm performance found out that firm size has a positive moderating relationship on the performance of a firm and that firm size defines the competitive advantage of a firm. The study was based on marketing specifically relational capital and used interpretative lens of resource dependency theory. The variables looked at were cost of goods sold and earning per share. The study used content analysis to get disclosure tools where a specific disclosure index was

developed. Seventy three (73) listed firms in France, Germany, Italy and the UK were picked into the study and data covering the period from 2011 to 2013 were from them and analyzed using six regression models.
Katuku and Dzingirai (2014) carried out a study on the on the determinants of Bank Failures in Multiple- Currency Regime in Zimbabwe, and concluded that size of the bank had a significant negative correlation to chances of failure therefore whenever the size of the bank increases, the probability of failure decreases. It was evident that majority of the affected banks were smaller in size compared to large banks that hold more assets are able to diversify their risks. This is contradictory as compared to research findings by other authors that used firm size as a moderating variable, while focusing on profitability and financial risk for Islamic banks.

In conclusion the relationship between the size of the bank and performance has been a subject by many authors. Most studies have found firm size to have a positive relationship to performance (Gyamera & Amoah, 2015; Tariq, Usman, Mir, Aman, & Ali, 2014; Ayele, 2012). Some studies have also showed contradicting results where the relationship was negative (Amare, 2012). This study was unique compared to the past researches as firm size had been taken as a moderating variable. Natural logarithm of total assets was used to measure Firm size obtained from secondary data.
There is a direct link between the size of the bank and the operational costs. In Kenya, CBK which is the banks regulator uses the tier system of classification where commercial banks have been classified in three tiers namely tier1 comprising of large banks, tier 2 made up medium-sized lenders and Tier 3 composed of small-scale lenders and holding49.9%, 41.7% and8.4%marketshares respectively CBK (2016) The size of the firm depends on the amount of assets a firm owns. Larger firms benefit from economies of scale and therefore are more likely to record more profits than smaller banks. Larger banks have a wider base of clientele (Imane, 2020)

Mwihaki, Irungu, & Mutwiri (2022) did a study that sought to determine the impact of bank size on commercial bank performance in Kenya using the natural logarithm of total assets as a measure of bank size. The study used pannel data spanning eight year period from 2023 to 2020 analysed using descriptive and multiple regression. The study found out that size of the bank has a statistically significant effect on performance and concluded that there exists a statistically significant relationship between bank size and performance of commercial banks and thus as bank size increases, return on assets also increases.

In conclusion, the research advocates for consolidation and mergers since there is evidence those large banks perform better than small and medium banks and therefore it finds a positive relationship between firm size and financial performance of commercial banks in Kenya. This research was limited by the operating environment as it was characterized by risks and uncertainties due to its tumultuous nature of banking sector. The research made good use of secondary data; however, the researcher took note of their limitation in terms of rigidity and its historical nature. The study was affected by macroeconomic and microeconomic factors such as regulations and technology.

2.3. Financial Performance of Commercial banks

Financial performance refers to a company's financial health comparable to other companies in the same jurisdiction (Frederic, 2014). It serves as monetary indicator which points to how an organization is successfully implementing its policies and attaining its objectives. The primary objective of all commercial banks is to succeed financially. The solvency of any bank is automatically under threat if the bank cannot absorb adverse economic conditions which critically affect the economy (Matayo & Muturi, 2018). Odhiambo (2019) posits that financial performance enables commercial banks generate resources from operations over a specific period. When an organization excels financially the shareholders reaps the benefits. This encourages investment that result in economic growth. Banks can collapse due to crisis and underperformance both of which have negative affects economic growth (Mishra & Mohanty, 2018). Increased financial performance facilitates lenders to regain or to earn a profit, which allows them to establish organizations that can survive for a long period of time without depending subsidy from the government or donors (Wanjohi, Wanjohi & Ndambiri, 2017). Evaluation of a bank's financial performance aims at ascertaining its ultimate financial position and operating efficiently, as well as to assess its quality of assets, efficiency of management and realization of its goals, and to also ascertain its liquidity, solvency position and earning quality and (Fatihudin & Mochklas, 2018). The shareholders and investors normally make judgement at the end of the term by considering the previous performance when they began.

Njeru, (2018) suggest that the calculation is based on income and financial position reports, as well as data on stock prices. Return on equity (ROE), Net Interest Margin (NIM) and return on assets (ROA), are all financial performance

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indicators (Ngunyu, 2019). Profit after tax, ROE, earnings per share, ROA and any market value ration that is generally accepted can be used as a measure of financial performance (Mulwa, 2015). Odhiambo, (2019) also confirms that the commercial's bank performance is measured using ROE and ROA. This study also like the previous studies adopted ROA and ROE as a measure of commercial banks in Kenya in the period under consideration between 2016 and 2021.

Commercial banks' major objective is to make profits and therefore all efforts revolve around it. Other than profits some managers may prioritize economic and social objectives (Khrawish, 2011). In all cases whichever the priority the net margin (NIM), ROA and ROE are of great interest. Return on equity (ROE) indicate the return on shareholders' equity and therefore is used to show return on assets multiplied by the total assets to the ratio of equity. ROA shows the ability of management of the bank to make profits out of the though there might be biasness on the ratio resulting from other activities. If the banks have a higher equity, then ROA will also be higher and a lower ROE. ROE will tend to disregard the higher risk linked with higher leverage (Gul, Faiza, &Khalid, 2011). This is because ROE measures leverage.

METHODOLOGY

This study adopted a longitudinal and cross-sectional research design and utilized panel data. Secondary data of publications and audited financial reports were collected from the official websites of the Central Bank of Kenya (bank regulator) and commercial banks. The study solicited for quantitative data which were analyzed descriptively and inferentially. The target population of the study was 42 commercial banks .Purposive sampling method was used to determine the sample size where 34 commercial banks were picked. Data collected were screened, coded, entered and analyzed with the use of R statistical software version 4.3.2. Inferential analysis together with descriptive statistics were utilized in the analysis of data.

RESULTS AND DISCUSSION

Inferential Statistics

Table 4.1

Linear Mixed Effect Model to Determine the Moderating Effect of Firm Size on the Relationship between Environmental Risk and the Financial Performance of Commercial Banks

	ROE			ROA		
Predictors	***Estimates***	***CI***	***P***	***Estimates***	***CI***	***P***
(Intercept)	168.06	52.35 – 283.77	0.005	35.03	-4.85 – 74.90	0.085
Liquidity risk	-10.10	-31.18 – 10.98	0.345	-1.00	-6.22 – 4.23	0.707
Bank tiers						
Tier 1	Reference					
Tier 2	-109.39	-245.95 – 27.17	0.116	-11.75	-46.11 – 22.62	0.500
Tier 3	-159.27	-297.90 – -20.64	0.025	-18.94	-53.56 – 15.68	0.281
Credit risk	-0.41	-0.83 – 0.02	0.059	-0.00	-0.11 – 0.11	0.972
Exchange rate	-1.40	-2.47 – -0.33	0.011	-0.34	-0.72 – 0.04	0.077
Interest rate risk	-1.01	-2.69 – 0.68	0.239	-0.09	-0.75 – 0.57	0.791

CSR activities						
No	Reference					
Yes	0.45	-7.80 – 8.70	0.915	1.93	-0.10 – 3.95	0.062
Total loans	-0.09	-1.62 – 1.44	0.908	0.02	-0.36 – 0.40	0.924
Total number of branches	0.01	-0.14 – 0.17	0.867	0.00	-0.04 – 0.04	0.999
Number of ATMS	5.33	-3.60 – 14.27	0.240	0.71	-1.50 – 2.92	0.526
Number of agents	-0.02	-0.09 – 0.04	0.482	-0.00	-0.02 – 0.02	0.836
Moderating effect of firm size						
Liquidity risk (tier 1)	Reference					
Liquidity risk: tier 2	10.51	-13.90 – 34.93	0.396	1.92	-4.13 – 7.97	0.532
Liquidity risk: tier 3	-2.06	-25.96 – 21.84	0.865	2.28	-3.64 – 8.19	0.448
Credit risk: tier 1	Reference					
Credit risk: tier 2	0.25	-0.23 – 0.74	0.305	0.01	-0.11 – 0.14	0.856
Credit risk: tier 3	0.17	-0.31 – 0.66	0.476	0.05	-0.07 – 0.17	0.382
Exchange rate: tier 1	Reference					
Exchange rate: tier 2	1.13	-0.13 – 2.38	0.077	0.15	-0.17 – 0.46	0.357
Exchange rate: tier 3	1.29	0.01 – 2.56	0.049	0.18	-0.14 – 0.50	0.272
Interest rate risk: tier 1	Reference					
Interest rate risk: tier 2	0.69	-1.28 – 2.65	0.492	0.09	-0.40 – 0.58	0.720
Interest rate risk: tier 3	2.02	0.04 – 3.99	0.046	-0.18	-0.68 – 0.32	0.470
CSR: tier 1	Reference					
CSR: tier 2	-2.39	-12.78 – 8.01	0.651	-2.30	-4.89 – 0.28	0.080
CSR: tier 3	-0.21	-1.82 – 1.40	0.797	-0.04	-0.44 – 0.36	0.854
Total branches: tier 1						
Total branches: tier 2	-0.07	-0.31 – 0.18	0.596	-0.01	-0.07 – 0.05	0.698
Total branches: tier 3	0.32	-0.04 – 0.68	0.086	-0.22	-0.31 – -0.14	<0.001

ATMS: tier 1	Reference					
ATMS: tier 2	-5.86	-15.18 – 3.46	0.216	-0.85	-3.16 – 1.46	0.467
ATMS: tier 3	-8.78	-18.18 – 0.63	0.067	1.03	-1.32 – 3.38	0.389

ROE model Interclass correlation (ICC)-0.45
ROA model ICC- 0.24

From the table, ROE intercept is 168.06 with a 95% confidence interval (CI) of 52.35 to 283.77 and a statistically significant p-value of 0.005. This suggests a strong starting point for ROE. The ROA intercept is 35.03 with a wider CI (-4.85 to 74.90) and a p-value of 0.085, indicating no statistical significance. Firm size, moderates the relationship between risk factors and financial performance. For both ROE and ROA, tier 1 serves as the reference category. The results show that in tier 2 banks, there is a negative impact on ROE, with an estimate of -109.39 and a p-value of 0.116. However, the impact on ROA is less pronounced, with an estimate of -11.75 and a p-value of 0.500, indicating that tier 2 banks may face challenges in maintaining high ROE when compared to tier 1 banks. In tier 3 banks, there is a significant negative impact on both ROE (-159.27) and ROA (-18.94), suggesting that the smallest banks face hurdles in achieving favorable financial performance.

The results also indicate that liquidity risk does not significantly impact ROE or ROA across all tiers. Credit risk has a negligible influence on ROE and ROA with estimates close to zero. Exchange rate risk shows a negative impact on both ROE and ROA in tier 1. In tier 2, the effect is negligible with, with p-values of 0.077 and 0.357. In Tier 3, exchange rate risk has a significant positive impact on ROE (estimate of 1.29) but still negatively affects ROA (estimate of -0.34). Interest rate risk does not significantly affect ROE or ROA, with p-values ranging from 0.239 to 0.791 across different tiers. The estimates are close to zero, indicating that interest rate risk has a minimal influence on financial performance.

CSR activities have a positive impact on ROE in tier 2, suggesting that smaller to medium-sized banks in tier 2 benefit from engaging in CSR activities. However, CSR activities do not significantly affect ROA, with p-values ranging from 0.482 to 0.999 across tiers. Total loans showed that loan portfolio does not significantly influence ROE or ROA. The number of branches affects financial performance differently across tiers. In tier 1 and tier 2, the impact is not statistically significant, with p-values ranging from 0.596 to 0.698. However, in tier 3, a higher number of branches has a negative impact on ROA, with a significant p-value of <0.001. The number of ATMs and agents maintains a consistent but modest insignificant impact on financial performance across tiers. These variables have a relatively stable influence on ROE and ROA.

The analysis further explores the moderating effects of firm size within each risk factor category. For instance, within liquidity risk, tier 2 banks exhibit a positive moderation on ROE (estimate of 10.51), while Tier 3 banks show a positive moderation on ROA (estimate of 2.28), indicating that firm size moderates the relationship between liquidity risk and financial performance differently. Similarly, within credit risk, no significant differences are observed in the moderating effect of firm size, as p-values range from 0.305 to 0.856. This suggests that credit risk impacts financial performance consistently across tiers. Within exchange rate risk, the moderating effect of firm size varies, with tier 3 banks experiencing a positive impact on ROE (estimate of 1.29). In contrast, tier 2 banks show a positive impact on ROA (estimate of 0.15). This suggests that larger banks may have distinct strategies for managing exchange rate risk. Interest rate risk also exhibits varying effects across tiers, with tier 3 banks experiencing a positive impact on ROE (estimate of 2.02). However, interest rate risk does not significantly impact ROA across tiers. For CSR activities, the moderating effect of firm size is evident in tier 2, where engagement in CSR activities positively impacts ROE (estimate of 1.93). This highlights the strategic advantage of CSR for smaller to medium-sized banks. The total number of branches also shows a significant moderating effect in tier 3, where a higher number of branches negatively impacts ROA (estimate of -0.22). This underscores the challenges that smaller banks face in managing extensive branch networks efficiently. The regreression equations for both ROE and ROA are as follows:
For ROE

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$ROE = 168.06 - 10.10\ X1 - 109.39X_2 - 159.27X_3 - 0.41X_4 - 1.40X_5 - 1.01X_6 + 0.45X_7 - 0.09X_8 + 0.01X_9 + 5.33X_{10} - 0.02X_{11} + 10.51M_1 - 2.06M_2 + 0.25M_3 + 0.17M_3 + 1.13M_4 + 1.29M_6 + 0.69M_7 + 2.02M_8 - 2.39M_9 - 0.21M_{10} - 0.07M_{11} + 0.32M_{12} - 5.86M_{13} - 8.78M_{14} + b0j + \epsilon$
.....(4.7)

For ROA
$ROA = 35.03 - X_1 - 11.75X_2 - 18.94X_3 - 0.34X_5 - 0.09X_6 + 1.93X_7 + 0.02X_8 + 0.71X_{10} + 1.92M_1 + 2.28M_2 + 0.01M_3 + 0.05M_4 + 0.15M_5 + 0.18M_6 + 0.09M_7 - 0.18M_8 - 2.30M_9 - 0.04M_{10} - 0.01M_{11} - 0.22M_{12} - 0.85M_{13} + 1.03M_{14} + b0j + \epsilon$ .....(4.8)

Where: X_1 - $X_{11:}$ Liquidity Risk, Bank tier 2 (dummy variable),X_3: Bank tier 3 (dummy variable), Credit Risk, Exchange Rate, Interest Rate Risk, CSR (dummy variable), Total loans, Total number of branches, Number of ATMs and Number of Agents respectively. While $M_1 - M_{14}$ represents the interaction between a variable and firm size (represented by bank tiers).

The classification of banks into tiers based on their size has provided interesting insights into the effects of risks on financial performance at these tiers. Level-dependent effects on ROE and ROA in Tier 2 banks exhibit a significantly negative impact on ROE (-109.39) compared to Tier 1, indicating difficulties in maintaining high profitability. However, the impact of ROA in Tier 2 banks is small (-11.75), meaning a relatively moderate impact on efficiency. Tier 3 banks show a particularly negative impact on both ROE (-159.27) and ROA (-18.94), highlighting the major barriers to smaller banks' achieving better financial performance metrics. The findings indicate that economic risk management does not significantly affect ROE or ROA at different levels, suggesting a consistent pattern regardless of bank size, specifically on liquidity and credit risk impact. Credit risk exhibits a negligible impact on financial performance at the various levels, with estimates close to zero, indicating little effect on ROE and ROA.

Exchange rates risk and interest rate risk under economic risk affects tier 1 negatively in terms of both ROE and ROA, with Tier 3 having a different influence, which is a significant positive relationship on ROE but also a negative relationship on ROA. This outcome shows a strong relationship between exchange rates of risk and financial performance at different levels due to moderation. Interest rate risks appear to have a negligible effect on ROE and ROA, with estimates close to zero, indicating little effect on financial performance indices.

CSR Activities and Credit Impact*:* CSR activities show a positive impact on ROE in Tier 2 banks, suggesting potential benefits for small and medium-sized banks engaging in CSR. However, these activities do not significantly affect ROA at the different levels (Baraza, 2020). Loan book size does not appear to have a significant effect on ROE or ROA across banks, suggesting that total loans have a negligible impact on financial performance. These findings highlight the subtle effects of risks and strategic decisions on banks' financial performance, especially when considered in terms of their size or position (Mohamed & Onyiego, 2018). Tier 2 and Tier 3 banks are synchronized to maintain high benefits in comparison to Tier 1, whose purpose is banks of banks. It is to ensure its financial stability amidst various challenges.

An analysis of various levels of the classification of banks into a particular tier (tier 1, tier 2, and tier 3) based on their size sheds light on how risks and strategic decisions are taken if the business affects financial performance at these levels. Butt, Ayub, Latif, Asif, Shabbir, & Raja, (2022) postulate that these Tier 2 banks exhibit a negative impact on ROE, indicating difficulties in maintaining high profitability, while the impact on ROA is small. Tier 3 banks face a significant negative impact on both ROE and ROA, showing barriers to smaller banks' achieving positive financial performance. Economic risk has no significant impact on ROE or ROA at different levels, indicating a consistent economic risk strategy regardless of bank size these results are same as those of (CBK, 2018 and Onuonga, 2014).
There is a negligible relation on financial performance at various levels, meaning a relatively small impact on ROE and ROA. Different effects between levels, with column 1 showing a negative impact on ROE and ROA and column 3 having a positive effect on ROE but a negative effect on ROA, reflecting different approaches to managing exchange rate risk handled in banks of various sizes. The study exhibits different effects across levels, with phase 3 having a positive relation on ROE but no significant relation on ROA.

CSR activities affect ROE in tier 2 banks positively, indicating the benefits for small and medium-sized banks to engage in CSR activities, but does not affect ROA in tier 2 significantly. Total debt quantity has a negligible effect on economic growth. According to James & Kepha (2020) ;(Imane, 2020), the increase in the number of branches at Tier 3 has a negative impact on ROA, highlighting the challenges for smaller banks in effectively managing extensive branch networks. The number of ATMs and the influence of employees consistently have a low impact on financial performance at different levels and show a stable but weak impact on ROE and ROA. The findings illustrate a low effect of firm size on risks as Tier 2 funds exhibit a positive effect on ROE, while Tier 3 funds exhibit a positive effect on ROA, reflecting the unique impact of firm size (Ouma *et al.,* 2020) ;(Mishra & Mohanty, 2018). No significant differences in the moderation of the effect were found between different levels of credit risk. The impact of exchange rates varies across positions, suggesting that central banks may have different ways of managing this risk. Interest risk on Tier 3 funds has a positive impact on ROE. Tier 2 banks benefit from engaging in CSR, reflecting the systemic benefits for small and medium-sized banks (Ifeanyi *et al.,* 2016); (Mallinguh *et al*., 2020).

Significant moderating effects in Level 3 which illustrate the challenges that small banks face in effectively managing extensive branch networks. These findings highlight the need for flexible approaches to risk management and strategic decisions based on capital and market conditions to ensure economic growth. Analysis of the relationship between risk factors and financial performance of commercial banks in Kenya provided valuable insights into the nature of risk management and its impact on financial metrics such as

Return on Equity (ROE) and Return on Assets (ROA). The study incorporated financial, reputational, and technical risks, providing a comprehensive view of the impact on banks' performance. In analyzing economic risks, especially currency and credit risks, Chipa & Wamiori (2020) and James & Kepha (2020) assert that it was clear that although they individually did not show a direct and statistically significant impact on ROE or ROA, they played an important role in shaping the overall financial position in the 1990s.

Despite their immediate impact, the pattern of liquidity and credit risk management in banks of different sizes reflects the disciplined risk management framework of the Kenyan banking sector. Butt *et al*. (2022) contends that turnover risk, typically associated with corporate social responsibility (CSR) activities, revealed an interesting trend. Although involvement in CSR activities showed a slight positive effect on ROE, it was not statistically significant. However, a significant positive impact on ROE was observed among Tier 2 banks, highlighting the strategic value of CSR for small and medium-sized banks in Kenya (Imane, 2020). The findings suggest that a focus on CSR can significantly improve the financial performance of these banks.

Technological risk measured by the number of ATM employees did not show a strong and direct relationship with ROE and ROA. However, it highlighted the need for banks to use technology strategically to improve their efficiency, customer service, and accessibility. The effect of firm size in the risk categories revealed interesting changes in the impact on financial performance measures (Baraza, 2020). Tier 3 banks representing smaller institutions faced significant challenges, manifested mainly in the negative implications for ROE and ROA of risks (Muriithi & Waweru, 2017). For example, branch density has been shown to have a negative effect on ROA for Tier 3 banks, highlighting the difficulties these smaller banks have in managing their sprawling branches effectively (Mishra & Mohanty, 2018). Exchange rate risk also known as currency risk showed different results at different levels, suggesting that larger banks may have more specific strategies to manage this risk compared to smaller banks, and interest rate risk showed a positive impact on ROE for Tier 3 banks, indicating that there are different risk management strategies in banks of various sizes.

The study revealed how firm size, broken down into different levels, differentially alters the relationship between risk and financial performance. This outcome is consistent with existing literature suggesting that large and medium-sized banks may be exposed to risks differently. For example, Ashraf *et al*. (2021) and Mohamed & Onyiego (2018) contend that smaller banks may face challenges in managing extensive branches, negatively affecting ROA, which is consistent with findings that smaller banks struggle more with cost management. According to Kioko *et al*. (2019) the study revealed different effects of exchange rate and interest rate risks at the bank level. This indication is consistent with a previous study suggesting that larger banks may have different strategies for managing these risks compared to smaller banks, leading to other effects on financial ratios (CBK, 2018); (Mishra & Mohanty, 2018). Overall, although the

specific nuances and scope of findings may vary, the general trends in the analysis are patterns and understandings from previous research on risks and economic performance in the banking sector.

CONCLUSIONS

The study found that firm size significantly moderates the relationship between environmental risk and financial performance, with different tiers of firm size influencing how environmental risks affect financial outcomes. This finding therefore imply that we reject the null hypothesis and conclude that firm size has a significant moderating effect on the relationship between environmental risk and financial performance of commercial banks in Kenya.

RECOMMENDATIONS

The study recommends the need to adapt risk management strategies based on bank size to enhance resilience against environmental risks. There is also need to study the internal dynamics and adaptive strategies of banks of varying sizes to understand their resilience and risk management practices

The other recommendation is for strategic decision-making in banks. For instance, small and medium-sized banks may consider engaging in CSR activities because they appear to positively affect ROE.

This study further recommends, future studies to investigate the relationship between the geographical expansion of commercial banks by checking on the available factors to improve efficiency. Practical exploration of the stability factors of the different branches located in other geographical areas will help enhance efficiency in the financial performance of banks. Therefore, the study should focus on the existing specific benefits and the key elements that can help the banks penetrate the other markets. Notably, practical analysis of the economies of scale and the customers' accessibility will be the key driving factors in enhancing the organization's running.

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