**Impact of Prudential Regulations on the Profitability of Commercial Banks Listed at the Nairobi Securities Exchange, Kenya**

# ABSTRACT

Commercial banks play a crucial role in promoting national economic growth by facilitating investment between lenders and borrowers, with a strong focus on profitability. However, Kenyan commercial banks have faced challenges with unstable and decreasing profitability in recent years. This study aimed to assess the impact of prudential regulations on the profitability of commercial banks listed on the Nairobi Stock Exchange (NSE). Specifically, the study examined the effects of regulations on capital adequacy, liquidity, and credit risk, as well as whether the size of the banks moderated these relationships. The study was guided by stakeholder, capital buffer, liquidity preference, efficiency structure, and resource-based theories. Using an explanatory research design, the study targeted the 11 publicly traded banks in Kenya, employing a census approach. Secondary panel data from 2013 to 2021 was analyzed using panel regression, correlation analysis, and descriptive statistics. Diagnostic tests, such as multicollinearity and homoscedasticity, were also conducted. The findings indicated that liquidity and credit risk regulations negatively impacted profitability, as measured by both ROA and ROE. However, capital adequacy requirements had little effect on profitability. The study also found that bank size did not significantly influence the relationship between prudential regulations and profitability. Based on these results, the study recommends that the Central Bank of Kenya review its liquidity regulations to enhance profitability while ensuring banks can meet customer withdrawal demands. Additionally, it suggests that commercial banks collaborate with the Central Bank to tighten credit risk regulations to improve loan recovery rates. Lastly, the study advises commercial bank management to maintain a low ratio of liquid assets to total assets to meet monthly obligations and reduce non-performing loans through stricter credit approval processes.

**Key Words:** *commercial banks, profitability, prudential regulations, liquidity, credit risk, capital adequacy, loan recovery, non-performing loans.*

**1.0 INTRODUCTION**

Commercial banks play a crucial role in the allocation of economic resources and contribute to national economic growth by providing investor loans and supporting state finances (Ongore, 2013; Otuori, 2013). However, countries have faced banking challenges due to internal factors such as inadequate capital and lax regulation, necessitating reforms. Effective bank regulation is essential for managing the banking sector responsibly and ensuring profitability (Berg, 2010). Several studies have explored factors influencing bank profitability, with a focus on the specific characteristics of banks (Muhamad & Che Arshad, 2019). In Malaysia, research by Aziz (2017) and others has highlighted the factors affecting the profitability of both conventional and Islamic banks. In Nigeria, the National Strategy for Economic Strengthening and Development (NEEDS) was introduced in 2004 to recapitalize financial institutions and develop a competitive financial system, leading to significant growth in the banking industry (Chidozie & Ayadi, 2017). In contrast, Kenyan banks have experienced declining profitability, which has negatively impacted economic growth (Gizaw, Kebede, & Selvaraj, 2015). Low profitability often leads to banking crises, as evidenced by the global financial crisis of 2007 (Mulwa, 2015). Proper regulation, particularly by the Central Bank, is crucial to protecting depositors and ensuring a stable banking environment (Dietrich & Wanzenried, 2011). In Kenya, the Central Bank is the primary regulatory body, with its authority rooted in the Financial Act and the Central Bank of Kenya Act (CBK, 2016). Prudential regulation, which includes measures for capital adequacy, credit risk, and liquidity management, is key to maintaining financial stability and preventing crises (Musabi & Mutua, 2018). While tightening regulatory standards helps avert banking failures, it also increases initial setup costs, giving larger banks a competitive advantage over smaller ones (Yu et al., 2014).

Prudential regulations are guidelines set to structure the actions of financial institutions and ensure the stability of financial markets. These regulations, implemented by the central bank, are designed to safeguard the continuous and effective operation of financial institutions, encouraging economic growth through investment activities. These regulatory measures, which include credit risk management, liquidity management, and capital adequacy, play a key role in protecting the financial system. One critical component of these regulations is the Capital Adequacy Ratio (CAR), which measures a bank's ability to withstand losses and ensure stability. The CAR is calculated by comparing a bank's equity capital to its risk-weighted assets. It serves as a cushion against potential losses, protecting depositors and maintaining confidence in the banking sector. Regulators monitor CAR to ensure that banks maintain the required capital levels for stability and efficiency.

Liquidity is another vital element in banking regulations, referring to a bank’s ability to meet financial obligations, particularly those to depositors. Banks with adequate liquidity levels tend to be more profitable. Key liquidity ratios include the loan-to-deposit ratio and the deposit-to-assets ratio. High liquidity ensures that banks can meet their short-term obligations without risking profitability. Additionally, credit risk, particularly in the form of nonperforming loans (NPLs), significantly impacts a bank’s profitability. A high level of NPLs signals poor loan quality, which can reduce profitability. Managing NPLs by minimizing their proportion of total loans enhances a bank's overall financial health. In essence, effective prudential regulations that address capital adequacy, liquidity, and credit risk are essential for maintaining a stable and profitable banking sector.

Bank size refers to the total assets held by a bank within a specific period, typically one year (Kimani & Koori, 2018). It is closely linked to a bank's profitability and market power, influencing its market share (Kwakwa, 2014). Bank size plays a crucial role in the stability of the financial system and the economy, making it a topic of ongoing debate among policymakers and practitioners. The 2007-2008 global financial crisis highlighted the impact of bank size, with larger banks contributing significantly to the economic damage compared to smaller counterparts (Nzioki, 2011). A bank's size reflects its capabilities, production capacity, and asset base, often distinguishing larger banks from their industry peers (Sritharan, 2015). Bank size is essential for assessing economies of scale and growth rates, with total assets commonly used as the measure for evaluating its size and performance in the industry.

Profitability refers to a bank’s ability to generate returns from its assets, including stock and other investments, and is a key objective for commercial banks (Wen, 2010; Mulwa, 2015). While profitability is central to their strategies, banks also aim to achieve social and economic goals. This study examines how prudential regulations affect bank profitability, focusing on key metrics such as Return on Equity (ROE) and Return on Assets (ROA), which are essential for evaluating financial performance (Sheefeni, 2015; Akinwunmi, 2017). ROE measures the bank's profit relative to shareholder equity, helping assess the return on investment, with a higher ROE indicating a bank's ability to raise capital internally. ROA measures how effectively a bank generates income from its assets, reflecting its resource management efficiency. Both metrics highlight how well banks utilize their resources to maximize profitability (Khrawish, 2011; Wen, 2010).

The Nairobi Stock Exchange (NSE), established in the 1930s, initially operated under informal agreements, with its trading infrastructure not widely understood. It was formally registered in the 1950s under the Societies Act of 1954. Following years of growth, the NSE rebranded as NSE Limited in 2011, operating under Kenya's Capital Market Act (Chapter 485A). By the end of the 2015 fiscal year, Kenya had 44 licensed commercial banks, 11 of which were listed on the NSE. These include I&M Bank, NCBA Bank, Diamond Trust Bank, Standard Chartered, Co-operative Bank, Housing Finance, Absa Bank, National Bank, and Equity Bank, among others.

**1.1 Research Problem**

Commercial banks play a crucial role in the economy by facilitating the transfer of scarce financial resources from surplus units to those in deficit for various investment purposes (Mulwa, 2015). Given their significant economic responsibilities, it is essential for banks to be properly supervised and regulated to ensure investor and client protection, industry stability, risk reduction, and the achievement of social banking objectives (Ferrarini, 2017). However, commercial banks have experienced a decline in profitability over time. For instance, the return on equity (ROE) of commercial banks decreased from 23.10% in 2011 to 21.99% in 2012, and further dropped in subsequent years, with key banks like Barclays and Equity reporting profitability reductions in 2016 (World Bank, 2017; CBK, 2017). Some banks, such as Chase Bank, have failed due to insufficient profitability, which often correlates with weak regulatory frameworks (CBK, 2016). Despite efforts to ensure stability through regulatory reforms, Kenyan banks continue to experience falling profitability. There is substantial empirical evidence linking prudential regulations to bank profitability. For example, Cekrezi (2015) found a significant impact of capital sufficiency on bank profitability in Albania, though contextual differences limit its applicability to Kenya. Similarly, studies on SACCOs and commercial banks in Kenya (Okumu & Oyugi, 2016; Kwakwa, 2015) have highlighted methodological and empirical gaps. This research aims to bridge these gaps by examining the effect of prudential regulations on the profitability of Kenyan commercial banks.

**1.2 Research Objective**

This study was guided by the following general objective to: assess the influence of prudential regulations on banking firms’ profitability in Kenya.

The specific objectives were to: To establish the effect of capacity adequacy regulations on profitability of listed commercial bank in Kenya, to examine the effect of liquidity regulations on profitability of listed commercial banks in Kenya, to determine the effect of credit risk regulations on profitability of listed commercial banks in Kenya and to assess the moderating effects of bank size on the relationship between prudential regulations and profitability of listed commercial banks in Kenya.

**1.3 Research Hypothesis**

This study was guided by the following Research Hypothesis.

**H01:** Capital adequacy regulations do not significantly affect profitability of listed commercial banks in Kenya.

**H02:** Liquidity regulations do not significantly affect profitability of listed commercial banks in Kenya.

**H03:** Credit risk regulations do not significantly affect profitability of banks in Kenya.

**H04:** Bank size does not substantially moderate the connection between prudential regulations and profitability.

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**1.4 Justification of the Study**

The study’s findings and recommendations should guide commercial bank management in evaluating the impact of prudential regulations on their profitability, suggesting that further research in this area may be valuable. These results can assist bank management in formulating prudential policies aimed at maximizing returns. Policymaking bodies like the Central Bank of Kenya (CBK) can use the study’s insights to shape strategic goals for prudential regulations and assess their effectiveness in enhancing financial institution stability. Additionally, the study benefits scholars and students by deepening their understanding of prudential regulations and business profitability, while identifying avenues for future research. Ultimately, this study contributes significantly to the theoretical and empirical knowledge on prudential regulations and commercial bank profitability.

**2.0 LITERATURE REVIEW**

***The Influence of Prudential Regulations on the Profitability of Commercial Banks***

The theoretical framework for this study incorporates five key theories: Capital Buffer Theory, Liquidity Preference Theory, Efficiency Structure Theory, Resource-Based View (RBV) Theory, and Stakeholder Theory.

Capital Buffer Theory, developed by Kalem and Rob (1996), posits that financial firms with a sufficient capital buffer are better equipped to absorb risks and prevent regulatory penalties. The theory suggests that banks with more capital tend to preserve their buffer, while those with less strive to raise their capital to meet regulatory requirements. The relationship between a bank’s capital adequacy and its risk management is central to the theory, where banks with a strong capital base are better positioned to handle unforeseen losses, thus ensuring stability and profitability. According to this theory, banks with more capital tend to be safer, as their capital base acts as a cushion for unexpected losses, preventing harm to depositors. The theory directly links capital sufficiency to bank profitability, as firms with larger buffers are more resilient and can better manage liquidity, aligning with the idea that capital adequacy influences risk management and profitability.

Liquidity Preference Theory, grounded in the work of Keynes (1936), explores why investors prefer liquid assets, such as cash or short-term securities, due to their ease of conversion to money without significant loss. The theory presents three motives for liquidity preference: the transaction motive, the precautionary motive, and the speculative motive. The transaction motive suggests that people desire liquidity to facilitate daily transactions, while the precautionary motive emphasizes the need for liquidity to prepare for unexpected financial needs. The speculative motive is based on the anticipation of future market fluctuations, encouraging investment in highly liquid assets. In banking, this theory is relevant because customers prefer banks with higher liquidity, which in turn enhances a bank’s profitability. The ability of banks to manage liquidity effectively, as indicated by this theory, plays a crucial role in determining their financial success. The theory highlights that liquidity and profitability are positively correlated, and banks with better liquidity management are generally more profitable and attractive to customers.

Efficiency Structure Theory, introduced by Demsetz (1973), argues that the scale of management efficiency leads to higher profitability in businesses, particularly in the banking sector. According to this theory, the management and strategic decisions of banks directly impact their profitability and portfolio composition. Two major hypotheses arise from this theory: the X-efficiency hypothesis, which asserts that better management and cost-control practices lead to greater profitability by optimizing bank operations, and the scale-efficiency hypothesis, which suggests that increasing the operational scale of banks reduces per-unit costs, enhancing profitability. The theory underlines the importance of effective management and operational efficiency in improving a bank's profitability. It highlights that well-managed banks with efficient cost structures are likely to be more profitable and competitive in the market.

Resource-Based View (RBV) Theory, first proposed by Penrose (1959) and further developed by Barney (1991) and others, emphasizes that a firm's internal resources are crucial to achieving a competitive advantage. The theory identifies that firms with valuable, rare, and difficult-to-imitate resources can outperform their competitors. Key resources, such as capital, technology, and human capital, play a central role in a firm's success. The RBV theory is especially applicable in understanding how banks can leverage their resources, such as assets, to maintain a competitive edge in the financial sector. The theory highlights that larger firms, measured by total assets, are likely to have better access to capital and resources, which can be used to improve profitability and operational efficiency. In the context of this study, the RBV theory is used to examine the impact of a bank's size on profitability, with firm size acting as a moderating variable in the relationship between prudential regulations and bank performance. The theory suggests that larger banks, with better resource utilization, are more likely to achieve superior financial performance.

Stakeholder Theory, advanced by Friedman (2006) and Hubbard (2009), focuses on the interests of various parties involved in a company's operations, including investors, employees, customers, and the government. The theory posits that businesses should consider the needs and expectations of these stakeholders to maximize profitability and long-term success. In the banking sector, stakeholders are concerned with the profitability, return on investment, and efficiency of operations. Investors seek a high return on their investments, while employees are concerned with job security and productivity. Customers expect banks to meet their financial needs, and governments are interested in ensuring that banks contribute to the economy through taxes and regulatory compliance. The stakeholder theory is particularly relevant to this study as it emphasizes the importance of meeting the diverse expectations of stakeholders to enhance firm profitability. By aligning the interests of various stakeholders, banks can create a favorable environment for sustained profitability and growth. Each of these theories provides a unique perspective on the factors influencing bank profitability. The Capital Buffer Theory highlights the importance of maintaining adequate capital to manage risks effectively, while the Liquidity Preference Theory emphasizes the role of liquidity in attracting customers and enhancing profitability. The Efficiency Structure Theory focuses on the significance of management efficiency and operational scale in driving profitability, and the Resource-Based View Theory underscores the importance of leveraging internal resources to gain a competitive advantage. Finally, the Stakeholder Theory stresses the need to balance the interests of various stakeholders to achieve long-term success. Together, these theories offer a comprehensive framework for understanding the dynamics of profitability in the banking sector and provide valuable insights for the study of financial performance in commercial banks.

***Empirical Review***

Various studies have examined the impact of capital adequacy, liquidity, and credit risk regulations on the profitability of financial institutions, with a focus on different regions and types of banks. Olalekan (2015) explored how the capital sufficiency of Nigerian banks influences their profitability. The study found that high capitalization enhances confidence among depositors and regulators, positively affecting profitability. However, this study focused on Nigeria, making it difficult to generalize its findings to Kenyan banks due to the differences in economic environments. Similarly, Sangmi and Nazir (2016) investigated the financial performance and capital adequacy of Indian banks, discovering a positive relationship between capital adequacy and profitability. Indian banks effectively managed their capital to meet the Reserve Bank of India's minimum requirement of 10%, and the results suggested that capital sufficiency was crucial for profitability. Although similar in focus on profitability, this study was centered on Indian banks and thus may not be directly applicable to the Kenyan banking sector.

Frederick (2015) analyzed the factors affecting the profitability of commercial banks in Uganda and found that capital adequacy had a positive and significant effect on profitability. This study used data from both local and foreign banks, confirming the importance of capital sufficiency in improving bank returns in Uganda. In Kenya, Barus et al. (2017) explored the relationship between capital adequacy and the sustainability of savings and credit cooperative societies (SACCOs). They found a strong and positive influence of capital adequacy on SACCO performance, suggesting that SACCOs should comply with capital adequacy regulations. However, this study's focus on SACCOs and its cross-sectional data collection limit its applicability to commercial banks in Kenya.

On the topic of liquidity, Pradhan, et al (2016) studied the relationship between liquidity and profitability in Nepal, finding that factors like loan-to-deposit ratios and asset quality were positively correlated with profitability. In Ghana, Kwakwa (2015) examined how liquidity, along with other factors like bank size and inflation, influenced commercial bank efficiency. The study revealed that liquidity had a small but positive impact on profitability, as indicated by return on assets (ROA) and return on equity (ROE). While this research focused on Ghana, it highlighted the need for similar studies in Kenya. Cekrezi (2015) found a negative relationship between liquidity and profitability in Albanian commercial banks, suggesting that excessive liquidity might hinder bank profitability. Additionally, Golubeva, et al (2019) studied liquidity risk and its impact on bank profitability, finding that higher liquidity risk and larger bank size negatively affected profitability.

In terms of credit risk regulation, Gizaw et al. (2015) examined the impact of credit risk management on the profitability of Ethiopian banks, concluding that effective management of non-performing loans (NPLs) significantly improved profitability. Similarly, Okumu and Oyugi (2016) studied SACCOs in Kisumu and found a positive link between asset quality and profitability, recommending improvements in asset management to enhance profitability. In Kenya, Barus et al. (2017) also investigated the role of asset quality in SACCO profitability, emphasizing the need for careful loan regulations. Although the studies in Kenya focused on SACCOs, their findings underline the importance of credit risk management in financial institutions. Overall, while the studies across different countries highlight the significant role of capital adequacy, liquidity, and credit risk management in enhancing profitability, the findings are not universally applicable due to varying economic conditions and institutional characteristics across countries.

**3.0 RESEARCH METHODOLOGY**

The research design serves as a plan to guide the entire research process, including data collection, measurement, and analysis. In this study, an explanatory research design was employed to investigate the causal relationship between prudential rules and the profitability of publicly traded commercial banks in Kenya. Explanatory research design is useful for establishing clear cause-and-effect relationships between independent and dependent variables (Creswell, 2017). The study also included a test for moderator effects using the technique developed by Whisman and McClelland (2005), which examines how a moderator variable, in this case, bank size, interacts with predictor variables to influence the outcome.

The target population for this study was the 11 publicly traded commercial banks in Kenya, as specified by the unit of analysis (Olalekan, 2015). Given the small size of the population, a census sampling method was employed to collect data from all 11 banks during the period from 2013 to 2021 (Mugenda & Mugenda, 2013). Secondary data, drawn from the audited financial reports of these banks, were used for the study. A document review guide, containing rows and columns where each variable and study period were listed, was used to gather the data

Data collection procedures involved obtaining necessary approvals, including a letter of introduction from Kenyatta University and a research permit from NACOSTI. Data were extracted from the Central Bank of Kenya (CBK) website using the document review guide. According to Cox & Hassard (2010), data collection procedures outline the steps researchers follow to gather data, which in this case, involved reviewing documents from 2013 to 2021.

For data analysis, the study employed a panel regression model, as recommended by Raharjo et al. (2014). This method is ideal for analyzing two-dimensional (cross-sectional and longitudinal) data, allowing for the examination of the relationship between variables over time. Panel regression was applied to data collected from the same 11 commercial banks over an eight-year period (2013–2020). By analyzing this data, the study aimed to draw inferences about the relationship between prudential rules (predictor variables) and the profitability (dependent variable) of these banks (Jones, 2007; Monsen, 2018).

The diagnostics tests used to assess the model’s reliability include several important checks. The multicollinearity test uses the variance inflation factor (VIF) to determine if there is severe multicollinearity in the data; a VIF greater than 10 indicates multicollinearity, while a value below 10 suggests its absence. The normality test, conducted with the Shapiro-Wilk test, checks if the data follows a normal distribution, with a p-value greater than 0.05 supporting the normality assumption. The homoscedasticity test, using the Breusch-Pagan test, evaluates if residuals have constant variance. A p-value less than 0.05 suggests heteroskedasticity, requiring the use of robust standard errors. The autocorrelation test applies the Durbin-Watson test, where a score around 2 indicates no autocorrelation; scores between 1.5 and 2.5 are considered normal. The stationarity test examines panel data for stationarity using the Levin, Lin, and Chu test, with stationary data being classified as I(0) and non-stationary as I(1). Finally, the Hausman test determines whether a fixed or random effects model is appropriate; a significance score above 0.05 suggests the random effects model is more suitable. These tests ensure the model's assumptions are met, validating its reliability.

Ethical considerations, as defined by Zainuldin, et al (2018), involve guidelines that distinguish right from wrong. Researchers are urged to follow ethical standards, and the researcher ensured confidentiality of data gathered from the banks to uphold these principles.

**4.0 RESULTS AND DISCUSSION**

**4.1 Descriptive Statistics**

From 2013 to 2021, the average profitability (ROA) of banks listed on the NSE was 3.94%, ranging from a minimum of 0.4% to a maximum of 7.7%. Over the same period, the average Return on Equity (ROE) was 24.58%, with values ranging from 3.1% to 47.2%. The average capital adequacy of these banks stood at 19.49%, with a minimum of 5.4% and a maximum of 38.7%. Liquidity averaged 55.73%, with a range between 29% and 144.3%. The mean credit risk was 0.11, fluctuating between 0.014 and 0.44. Lastly, the average bank size was 286,319.9, with the smallest at 46,755 and the largest at 877,415. These findings offer a detailed picture of the financial health and stability of NSE-listed banks over this period.

***Table 1 Descriptive Statistics***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **Obs** | **Mean** | **Std. Dev.** | **Min** | **Max** |
| Profitability (ROA) | 99 | 3.942626 | 1.553754 | 0.4 | 7.7 |
| Profitability (ROE) | 99 | 24.57677 | 9.338455 | 3.1 | 47.2 |
| Capital adequacy | 99 | 19.48788 | 4.169209 | 5.4 | 38.7 |
| Liquidity | 99 | 55.72879 | 26.27273 | 29 | 144.3 |
| Credit risk | 99 | 0.110368 | 0.067344 | 0.014054 | 0.439679 |
| Bank size | 99 | 286319.9 | 172240.8 | 46755 | 877415 |

**Source: Research Data (2023)**

**4.2 Diagnostic Testing**

In this section, the diagnostic testing results are presented to validate the accuracy of the statistical findings, including tests for stationarity, Hausman, multicollinearity, normality, heteroscedasticity, and autocorrelation. The multicollinearity test results, shown in Table 2, revealed that the maximum Variance Inflation Factor (VIF) was 1.16, the minimum was 1.02, and the mean was 1.09. Since none of the VIF values exceeded 10, it was concluded that there was no multicollinearity among the study's variables. The normality test, displayed in Table 3, indicated that the p-values for each variable were greater than 0.05, suggesting that the variables were normally distributed.

Heteroscedasticity was tested using Table 3, where a p-value of 0.091, greater than 0.05, indicated that the error terms were heteroskedastic. Therefore, the null hypothesis was accepted, confirming that the variance of the error terms was constant, implying homoscedasticity. Autocorrelation testing, shown in Table 2, revealed a Durbin-Watson statistic of 1.52274, which fell within the acceptable range of 1.5 to 2.5. This confirmed that the assumption of independence among the study's predictor variables was satisfied.

Stationarity was examined using the Levin-Lin Chu unit-root test, as presented in Table 3. Variables such as bank size, capital adequacy restrictions, and profitability (ROA and ROE) had p-values less than 0.05 at the level, indicating that these variables were stationary. However, credit and liquidity risk variables showed p-values greater than 0.05 at the level, suggesting the presence of a unit root. After first differencing, these variables became stationary.

The Hausman test, used to determine whether to choose a fixed effects or random effects model, is presented in Tables 3 and 4. The results of the Hausman test for the ROA and ROE models indicated p-values of 0.072 and 0.0573, respectively, both greater than 0.05, meaning the chi-square values were statistically insignificant at the 5% significance level. Therefore, the null hypothesis was not rejected, and the random effects model was deemed more appropriate for both models over the fixed effects model.

**4.****3 Regression Analysis**

This section presents the findings from a panel regression analysis used to test the study's hypotheses, with random effects models being adopted based on the Hausman test results. The study sought to determine the relationship between prudential regulations and profitability, measured by Return on Assets (ROA). The regression equation revealed that prudential regulations explained 17.9% of the variation in profitability. Specifically, capital adequacy regulations showed a negative but statistically insignificant correlation with ROA (β = -0.02244, p = 0.486), implying that changes in capital adequacy requirements did not affect profitability, which aligned with the findings of Umoru and Osemwegie (2016). As a result, the hypothesis (H01) that capital adequacy regulations do not significantly influence profitability was not rejected.

On the other hand, liquidity constraints had a significant negative effect on ROA (β = -0.01732, p = 0.013), suggesting that a reduction in liquidity regulations would increase profitability, supporting the findings of Pradhan et al. (2016). Therefore, hypothesis (H02) that liquidity regulations do not significantly influence profitability was rejected. Furthermore, credit risk limitations exhibited a substantial negative impact on ROA (β = -6.58345, p = 0.003), indicating a strong negative correlation between credit risk regulations and profitability. This finding, consistent with Barus et al. (2017), led to the rejection of hypothesis (H03) that credit risk regulations do not significantly influence profitability.

**Table 2: Prudential regulations and Profitability (ROA)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Regression results for Random-effects** | | | |  |  |  |
| Number of obs | 99 |  |  |  |  |  |
| R-sq: | 0.1788 |  |  |  |  |  |
| Wald chi2(3) | 16.4 |  |  |  |  |  |
| Prob > chi2 | 0.0009 |  |  |  |  |  |
| **ROA** | **Coef.** | **Std. Err.** | **z** | **P>|z|** | **[95% Conf.** | **Interval]** |
| Capital adequacy regulations | -0.02244 | 0.032193 | -0.7 | 0.486 | -0.08553 | 0.040659 |
| Liquidity regulations | -0.01732 | 0.006974 | -2.48 | 0.013 | -0.03099 | -0.00365 |
| Credit risk regulations | -6.58345 | 2.242745 | -2.94 | 0.003 | -10.9792 | -2.18776 |
| \_cons | 6.071742 | 0.872305 | 6.96 | 0.000 | 4.362055 | 7.781428 |

**Source: Research data (2023)**

**4.4 Correlation analysis**

The study's results reveal a weak negative relationship between capital sufficiency requirements and profitability, measured by Return on Assets (ROA) (r=-0.0729, p>0.05), suggesting that changes in capital adequacy regulations result in minor, opposite changes in profitability. This contrasts with Olalekan’s (2015) study, which found a significant positive effect of capital adequacy on profitability in Nigerian banks. Similarly, liquidity risk regulations showed a negative and significant correlation with profitability (r=-0.2027, p<0.05), indicating that stricter liquidity risk regulations negatively impact profitability, aligning with findings by Golubeva, Duljic, and Keminen (2019) that profitability decreases with higher bank size and provisions for credit losses. A negative and significant correlation was also found between credit risk regulations and profitability (r=-0.3562, p<0.05), suggesting that changes in credit risk regulations result in opposite changes in profitability, contradicting Gizaw et al. (2015), who found a positive relationship between credit risk management and profitability in Ethiopian banks.

Regarding profitability as measured by Return on Equity (ROE), the results show a negative and insignificant relationship between capital adequacy and profitability (r=-0.0715, p>0.05), disagreeing with Umoru and Osemwegie’s (2016) study, which found a strong link between capital adequacy and financial viability. Likewise, liquidity risk regulations had a negative and insignificant impact on profitability (r=-0.1634, p>0.05), contrary to the findings of Pradhan, et al (2016) in Nepal. In contrast, a negative and significant correlation was observed between credit risk regulations and profitability (r=-0.3584, p<0.05), supporting Barus et al. (2017), who found that credit regulations affect the profitability of Kenyan savings and loan companies.

**Table 3: Correlation between Prudential regulations and profitability (ROA)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **ROA** | **Capital Adequacy regulations** | **Liquidity risk regulations** | **Credit risk regulations** |
| ROA | 1 |  |  |  |
| Capital Adequacy regulations | -0.0729 | 1 |  |  |
| Liquidity risk regulations | -0.2027\* | -0.0865 | 1 |  |
| Credit risk regulations | -0.3562\* | -0.1351 | -0.0604 | 1 |

**Source: Research data (2023)**

**4.5 Model Summary**

**Prudential regulations and Return on Equity**

The study found that prudential regulations explain 14.9% of the variation in profitability, as indicated by an R Square value of 0.1489. This suggests that capital adequacy regulations have a negative but statistically insignificant impact on profitability, with a coefficient of β=-0.12022 and a p-value of 0.527, which is greater than 0.05. Thus, the capital adequacy requirements do not significantly influence return on equity (ROE). These findings align with Frederick's (2015) research, which also indicated capital adequacy’s limited effect on profitability. Consequently, the null hypothesis (H01) regarding the insignificance of capital adequacy regulations was not rejected. However, liquidity risk regulations showed a significant negative impact on ROE, with a coefficient of β=-0.10323 and a p-value of 0.015, confirming a negative relationship between profitability and liquidity risk laws. This result supports Golubeva et al. (2019), who found that higher liquidity risk reduces profitability. As a result, the null hypothesis (H02) regarding the insignificance of liquidity regulations was rejected. Additionally, credit risk regulations had a significant negative effect on profitability, with a coefficient of β=-35.4609 and a p-value of 0.008. This suggests that lowering credit risk regulations improves profitability, contrary to Gizaw et al. (2015), who found a positive impact of credit risk management on profitability. Therefore, the null hypothesis (H03) regarding the insignificance of credit risk regulations was also rejected.

**Table 4 Prudential regulations and Profitability (ROE)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Regression results for Random-effects** | | | |  |  |  |
| Number of obs | 99 |  |  |  |  |  |
| R-sq: | 0.1489 |  |  |  |  |  |
| Wald chi2(3) | 14.62 |  |  |  |  |  |
| Prob > chi2 | 0.0022 |  |  |  |  |  |
| **ROE** | **Coef.** | **Std. Err.** | **z** | **P>|z|** | **[95% Conf.** | **Interval]** |
| Capital adequacy regulations | -0.12022 | 0.190186 | -0.63 | 0.527 | -0.49298 | 0.252534 |
| Liquidity risk regulations | -0.10323 | 0.042584 | -2.42 | 0.015 | -0.18669 | -0.01977 |
| Credit risk regulations | -35.4609 | 13.39706 | -2.65 | 0.008 | -61.7187 | -9.20317 |
| \_cons | 36.5862 | 5.235888 | 6.99 | 0.000 | 26.32404 | 46.84835 |

**Source: Research data (2023)**

**5.0 CONCLUSIONS**

The study examined the profitability of commercial banks listed on the Nairobi Securities Exchange (NSE) using both Return on Assets (ROA) and Return on Equity (ROE). It found that stricter capital adequacy regulations had a negative and statistically insignificant impact on profitability, suggesting that capital adequacy does not significantly influence bank profitability. Additionally, the research revealed a negative correlation between liquidity risk regulations and profitability, indicating that stringent liquidity regulations reduce banks' profitability potential. Similarly, the study found a strong negative relationship between credit risk rules and profitability, concluding that loosening credit regulations could enhance bank profitability. The study also examined the moderating effect of bank size on the relationship between prudential regulations and profitability. It concluded that an increase in total assets did not lead to changes in profitability, implying that larger banks do not have a profitability advantage over smaller banks. These findings challenge the traditional view that larger banks inherently enjoy higher profitability, highlighting that the growth of assets alone does not guarantee improved performance. The study suggests that both smaller and larger banks perform similarly in the Kenyan banking sector, and policymakers can use these insights to refine prudential regulations for more equitable outcomes across the sector.

**6.0 RECOMMENDATIONS**

The study revealed that liquidity and credit risk regulations have a significant impact on the profitability (ROA and ROE) of commercial banks, whereas capital adequacy regulations did not show a substantial effect. It recommended that the Central Bank of Kenya (CBK) review and strengthen liquidity and credit risk regulations to enhance profitability. Specifically, improving liquidity regulation is crucial for banks to meet withdrawal demands and short-term obligations, which would boost profitability. Additionally, banks should maintain a low ratio of total liquid assets to total assets to ensure monthly obligations are met. The study also suggested that tightening credit risk regulations would promote the effective use of loanable funds, improve loan recovery rates, and reduce non-performing loans. Consequently, commercial banks should enhance their credit approval procedures to further improve profitability.

The study examined the relationship between profitability and prudential regulations in Kenya's listed commercial banks. However, the findings are not applicable to other banks or financial institutions in Kenya. Future research should explore the impact of prudential rules on unlisted commercial banks, SACCOs, and microfinance banks. Additionally, the study focused on three specific prudential regulations, so further studies should consider other regulations, such as foreign exchange regulations, and their influence on financial performance across different institutions.

**COMPETING INTERESTS DISCLAIMER:**

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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