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Firm size, non-performing loans and financial performance: An analysis of commercial banks in Kenya

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Abstract

Commercial banks play a critical role mobilising and allocating financial resources in the economy. However, in the recent past banks have faced stiff competition as some have collapsed. As banks seek to grow in size their credit risk exposure increases that leads to lower than optimal return and profitability. Non-performing loans represent an expenditure to banks; their collection is expensive and in the long run they are written off. This study tries to explore the effect of non-performing loans on the relationship between firm size and financial performance. Theoretical frameworks relied in this study included the financial intermediation theory, stakeholder theory and behavioural theory of firm growth. Secondary data was collected for a period of 10 years (2014-2023) on all operating banks in Kenya. Unbalanced panel data was obtained since some banks did not operate for the entire period under focus. Diagnostic analysis carried out indicated that ROA as a measure of financial performance was not appropriate when total assets are used as a measure of firm size due to high levels of autocorrelation. Data was transformed to conform to test of normality. The findings concluded that firm size has a positive and significant effect on financial performance while NPLs have a negative and significant effect on the relationship between firm size and financial performance. Recommendation to policy makers, practitioners and regulators in banking sectors have been made based on research outcomes. This study adds to the existing body of knowledge, explore theories and provide empirical evidence.

Keywords: *Firm size, Non-Performing Loans, Credit risk, Total Assets, Number of Loan Accounts, Commercial banks in Kenya.*

1. INTRODUCTION

1.1 Background

Commercial banks play a vital role in management of cashflow and mobilization of investment capital (Sarpong & Winful, 2017). The large commercial banks are associated with better returns compared to small and emerging banks (Terraza, 2015). However, as banks increase in size their exposure to credit risk and management inefficiencies leads to reduced financial performance. Non-performing loans (NPL) also known as Credit risk occur when a loan facility is not paid in time and overtime the outstanding amounts cannot be recovered. Management needs to monitor

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and implement strategies and internal controls that mitigate credit risk exposure. It is important for bank managers and owners to balance growth, risk and efficiency to ensure that their firms can provide the desired level of performance.

Commercial banks in Kenya have experienced rapid growth over time. Central bank of Kenya is the regulator and has maintain a close oversight in the operation of lending institutions. However, despite the strong regulations various challenges have exposed banking sector and investors to losses. The level of NPLs has been on an upward trend while some banks have collapsed. Few have merged while some have been acquired by foreign or local banks. Such challenges have raised serious concerns about the effect of firm size and performance of banks. With the slowdown in economic performance, NPL levels shot in the period ended 2022 implying that the possibility of loan recovery had also gone down (Central Bank of Kenya, 2021). Despite these challenges, banks have developed innovative products and employed technologies to reduce losses and serve their customers better.

Despite the identified threats of NPLs on the relationship between firm size and financial performance, empirical studies carried out have yielded conflicting results. Khalil and Muhmmad (2017) concludes a positive effect of firm size on financial performance, a finding that is contradicted by Tharu and Shrestha (2019) and Parvin, Minhajul, Siddiqua and Ferdous, (2014). Such inclusions and difference in measuring the study variables present gaps that need to be researched. This study builds on identified research variables, how they are measured and their relationship in the Kenyan context. The findings of this study are aimed at contributing to the body of knowledge, providing empirical evidence for policy and regulations as well as providing insight to owners and managers of financial institutions on how the relationship between firm size and financial performance is affected by NPLs and management efficiency.

There are several challenges facing the Kenyan banking industry ranging from regulatory to changing market dynamics. Despite this, the industry has experienced exponential growth, stiff competition and shutdown of some local lenders; affecting both the small and large commercial banks. Regulatory reports indicate that commercial banks are severely exposed to credit risk and that the levels of NPLs have been increasing over the years.

Banks operative in an open and competitive environment, with each bank aim at improving its market share and dominance. Such competition takes place on digital platforms, advertisements and traditional banking services. However, as banks grow and customer dynamics change, risk and exposure to losses increases; (where the most common risk is the risk of loan default). Primarily, banks exist to perform financial mediation between savers and borrowers by ensuring efficient loan allocation at the minimum risk levels possible. Empirical study by Aladwan (2015) indicates that as bank increase in size risk exposure increases. Studies by Ngware, Olweny and Muturi, (2020), Teimet, Leshanga, Iraya and Elly (2019) Konya et al (2019), point to the fact that bank size influences, risk exposure that ultimately impacts financial performance. However, the findings of these studies differ to the extent to which such impact affects the overall financial performance levels.

This study identified several contextual gaps in how different researchers described and measured the study variables. Moreover, numerous studies had been conducted in different geographical areas and therefore the outcomes, variable relationships and general application of research findings could not be prorated to the Kenyan context. Conflicting outcomes and methodologies by local researchers left research gaps that need to investigate. There are notable differences between studies carried out. The inclusion of NPLs in the analysis of effect of bank size on financial performance was aimed at better defining the relationships among the three variables and how their interactions impact on the overall financial performance of commercial banks in Kenya.

1.2 Theoretical and Empirical Literature

The study focused on financial intermediation theory as described by Gurley and Shaw in 1960. According to the theory, financial institutions basically provide a mechanism for the savers to offer their money to lenders, since the two parties may not have enough information on each other, banks mediate their relationship. The theory rides on information asymmetry between borrowers and savers. Accordingly, as banks grow, credit risk exposure increases and this might eventually reduce their financial performance if measures are not put in place to address the risks. It is the aim of bank managers to grow banks, reduce credit risk and maximize financial returns.

The stakeholder theory proposed by Freeman 1984, was relied upon in this study. As per the theory, commercial bank managers are faced by various internal and external factors. These factors are referred to as "stakes". This theory expounds on the traditional agency theory, where the relationship only exists between the principal and the agent with each having conflicting objectives. Accordingly, managers need to factor in how each stakeholder affects the banks' operation including the government, political and operating environment. As banks grow, they seek to outgrow competitors but within the set out regulatory frameworks. Such limiting factors may hamper the growth, risk exposure and financial performance of banks. This theory acknowledges the influence of both internal and external factors that limit or control organizational size.

How organizations determine their growth path is best described by Behavioral theory of firm growth by Cyert and March (1963). According to the theory, firms make growth patterns that promise to maximize shareholders return based on previous performance or industry benchmarks. Managers will seek to grow in size, reduce risk exposure and obtain the highest levels of return within a given industry. Once such goals have been identified, sufficient communication is made to all levels within the organization for implementation and synergy. Growth objectives are therefore institutionalized and become a collective responsibility. In the Kenyan context, commercial banks set targets per branch or per region that if aggregated would lead to the desired growth levels. However, growth objectives should be set in a realistic manner since external factors can limit the firm's behavior and growth.

The study analyzed several empirical studies on the subject matter; Nyarko (2018) concludes that bank size positively influences financial performance while NPLs have a negative effect on financial performance. NPLs presents uncollectable amounts, an increase in provision for such amounts is included as an expense in the statement of financial performance. Such an expense reduces the overall profitability of the firm. Collaborative outcomes were obtained by Konya et al (2019) while studying banks in Kenya and using regression to analyze data.

Singh et al (2020) established that whereas firm size influences financial performance, NPL does not have any impact. Arafat and Buchdadi (2011) concluded that NPLs have a negative moderating

impact on the relationship between firm size and financial performance. This conclusion was drawn from analysis of Indonesian banks for a period of three years. Nayeem et al (2014) also notes that though NPLs negatively affect financial performance there are other variables that significantly affect the relationship other than NPLs.

This study having identified the various gaps in the analyzed empirical studies, collected data from all authorized and operating commercial banks in Kenya over a period of 10 years. Asset values and number of loan accounts were used to measure firm size, NPL ratio to measure levels of NPLs and financial performance ratios (Return on Assets (ROA) and Return on Equity (ROE). Published financial statements provided the secondary data required for statistical analysis. By combining these parameters and variables the current study focused on outlining the underlying relationships that had not been factored in the previous studies.

2. METHODOLOGY

Descriptive research design was used to assess the effect of NPLs on the relationship between bank size and financial performance. Objectives and hypothesis to be tested were developed in accordance with the positivism philosophy that emphasizes empirical and statistical proof of relationships and test the informed guesses of the researcher. The target population for the study was all commercial banks operating in Kenya between 2014 and 2023 which was a span of 10 years.

Published financial statements provided the secondary data required for the study. Firm size was measured using asset values and number of loan accounts while financial performance was measured using ROE and ROA. NPL ratio was computed as measures of NPLs. Data was collected for the entire period. Unbalanced data panel was obtained since a total of 371 entries were collected instead of the expected 390 entries since some institutions were not operational for the entire period of research.

Regression tools were used to analyze the collected data. Regression models and equation allow for the establishment of cause -effect relationship between study variables (Cooper & Schindler, 2013). Statistical analysis is essential in establishing direction, strength and significant levels of

existing relationships (Khan, 2008). Diagnostic tests were carried out to determine how fit the data collected was for purposes of hypothesis testing. These diagnostic tests included tests for autocorrelation, multicollinearity, stationarity test, heteroskedasticity and normality. Hausam test was used to identify if the study variables fit into random or fixed effect model. The final study models were used to statistically test the hypothesis and objectives derived.

3. RESULTS

3.1 Descriptive Statistics

Descriptive statistics are essential in defining data characteristics mean, standard deviation, minimum and maximum as well as skewness and kurtosis. The analysis of measures of central tendency and variability provides an insight into data behavior and trends. The total number of data set collected was 371 entries (N=371). The results are as shown in table 1 below:

Table 1: Summary of Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance	Skewness		Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Total Assets (million)	371	1425355.10	14.90	1425370.00	118707.6245	188257.47234	35440875891.403	2.834	.127	10.279
No. loan Acc (million)	371	10.25	.00	10.25	.2157	.98464	.970	7.882	.127	68.318
Mgmt. Eff	371	167.70	-73.20	94.50	20.6809	13.04941	170.287	-1.918	.127	20.580
NPLS	371	76.20%	0.00%	76.20%	16.3900%	13.81704%	190.911	1.916	.127	4.528
ROA	371	46.30	-37.00	9.30	1.0484	4.75313	22.592	-4.478	.127	29.249
ROE	371	503.00	-375.70	127.30	8.0293	34.76240	1208.425	-5.647	.127	55.164
Valid N (listwise)	371									

Total assets recorded an average of 118,707, a standard deviation of 188,257 and skewness of 2.84, Number of loan accounts had a mean of 0.21 and a standard deviation of 0.98. These two variables were used as measure of firm size. NPLs for the period of the study had a mean of 16.39% and a standard deviation 13.87. The average profitability as measured by ROA was 1.04 and 8.02 as measured by ROE. The standard deviation of ROA and ROE was 4.75 and 34.76 respectively.

Diagnostic tests were carried out to ensure that assumptions for regression model were not violated. This was to avoid biasness and inaccurate interpretation of regression outputs. The test

for autocorrelation between dependent and independent variables indicated that there was autocorrelation between asset values and ROA. Therefore, ROA was dropped as a measure of financial performance and ROE retained. Multicollinearity test was carried out, where the results showed that no multicollinearity existed. Data failed the test for normality and therefore had to be transformed to conform to the assumption of normality as required by assumptions of ordinary least square model. Using the Breusch-Pagan Test for heteroskedasticity, the data was found to exhibit homogenous characteristics. Hausman model specification test indicated that a random effect model was the most appropriate to analyze the data.

3.2 Hypothesis testing

To test the relationship of study variables; the study variable developed the following hypothesis:
H0: There is no effect of non-performing loans on firm size and financial performance of commercial banks in Kenya.

Table 2 presents findings of the hypothesis test. The model had an overall R-squared of 0.241 which implies that this model can explain 24.1% change in financial performance as measured by ROE. Firm size as measured by total asset values had a positive and significant effect on financial performance ($p<0.05$) where it was noted that an increase of 1 million shillings in assets resulted to an increase in performance (ROE) of 59.6 units. Number of loan accounts had no significant effect on financial performance ($p>0.05$).

NPLs representing Credit risk had a negative co-efficient (β=-45.89%, $p<0.05$) indicating that NPL has a negative and statistically significant effect on the relationship between firm size and financial performance as measured by ROE.

The constant term was 8.5 provides the value of ROE when all variables of NPL and Asset values are zero. The model summary had a p value of 0.000 ($p<0.05$) indicating that it was statistically significant.

Hypothesis one (H_{01}) evaluated the joint effect of NPLs on the relationship between firm size and financial performance with an assumption of no effect. The findings indicated that NPLs have a

negative and significant effect on the relationship between bank size (as measured by assets) and financial performance (as measured by ROE).

Table 2: Effect of NPLs on the relationship between firm size and financial performance

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Random-effects GLS regression                   Number of obs     =       371
Group variable: ID                              Number of groups  =        39

R-sq:                                           Obs per group:
     within  = 0.0503                                         min =         5
     between = 0.3226                                         avg =       9.5
     overall = 0.2410                                         max =        10

                                                Wald chi2(2)      =     34.94
corr(u_i, X)   = 0 (assumed)                    Prob > chi2       =    0.0000
```

ROE	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
TotalAssetsmillion	.0000596	.000015	3.99	0.000	.0000303	.0000889
NPLS	-45.89458	9.241966	-4.97	0.000	-64.0085	-27.78066
_cons	8.500784	4.358448	1.95	0.051	-.0416174	17.04318
sigma_u	22.371949					
sigma_e	22.108787					
rho	.50591611	(fraction of variance due to u_i)				

4. DISCUSSION

The findings indicate that bank size, when measured by total assets, is positively and significantly associated with financial performance measured by return on equity (ROE). The model explains 24.1% of the variation in ROE. In contrast, the number of loan accounts does not have a statistically significant effect. Non-performing loans (NPLs) have a negative and statistically significant effect on the relationship between total assets and ROE. These results suggest that asset growth alone does not guarantee stronger performance when credit risk remains high.

The positive relationship between bank size and financial performance is consistent with the studies by Nyarko (2018) and Konya et al. (2019) discussed in the article. It also aligns with the article's account of the behavioural theory of firm growth, under which firms pursue growth to improve returns. The negative role of NPLs is consistent with the reviewed findings that problem loans increase costs and weaken profitability, including the findings attributed to Nyarko (2018) and Arafat and Buchdadi (2011). The article also notes that prior studies have not been unanimous, underscoring the importance of the Kenyan context and the measures used.

The diagnostic results affected the interpretation of performance: ROA was excluded because the analysis indicated autocorrelation between total assets and ROA, while ROE was retained. The random-effects specification was selected using the Hausman test. Accordingly, the reported conclusions should be understood considering these modelling decisions and the study's unbalanced panel of 371 observations.

4.1 Conclusions

The study investigated the effect of NPLs on financial performance of commercial banks in Kenya. A total of 371 observations were extracted from published financial reports of all commercial banks operating in Kenya between 2014 and 2023. Preliminary data analysis necessitated data transformation to have normally distributed data. Further, collinearity tests indicated that ROA was not the best measure of financial performance when total asset is used as the dependent variable.

Hypothesis tests concluded that NPLs have a negative and significant effect of the relationship between total assets and ROE that number of loan accounts are not affected by management NPLs. These results affirmed earlier studies that had indicated that firm size has a positive effect on financial performance and NPLs have a negative effect on the relationship between firm size and financial performance. The study also reinforces conclusion of the behavioral theory of firm growth that suggest that firm aim to grow in order to improve returns to their shareholders.

4.2 Recommendations

From the conclusion of the research several recommendations arise for managers, shareholders and policy makers. In terms of size managers should mobilize resources that ensure that they grow institution size as well as set performance targets. Regulators should put in place proper policy that ensures managers do not aim too high in terms of growth to the detriment of shareholders. NPLs have a negative effect on financial performance and therefore bankers should apply measures that reduce risk exposures while it is recommended that the regulator sets an industry NPLs levels and ceiling which will act as benchmark for the banking industry. There is need for banks to develop individualized loanee assessment index to reduce adverse selection during the loaning process.

Banks are encouraged to continue sharing information via credit reference bureau to reduce multiple loan defaults from same individuals.

4.3 Proposed Theory of Change

It is recommended that policy makers provide an enabling and dynamic policy that evolves so as to cope with challenges faced by the banking industry. There is need to strengthen regulatory measures to improve customer and shareholders' confidence in the wake of collapsing banks. Key performance indicators and bank specific performance targets need to be continually monitored to ensure that the banking industry remains vibrant.

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