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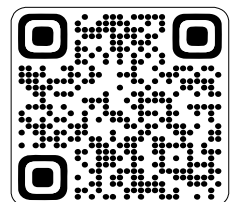


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THE IMPACT OF NON-PERFORMING LOANS ON THE PROFITABILITY OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

This study examined the impact of non-performing loans on bank profitability, using the information asymmetry theory and the bad management hypothesis. This study used a descriptive research design to use secondary data from 31 commercial banks in Kenya over 9 years from 2014 to 2022. The study employed multiple regression analysis techniques and descriptive statistics to determine the impact of non-performing loans in banks in Kenya. Similarly, the Ordinary Least-Squares regression method was employed, followed by examining the Fixed Effects and Random Effects techniques. According to the study results, the profitability of commercial banks in Kenya is negatively impacted by higher levels of non-performing loans. Thus, the results supported the theories of information asymmetry and bad management. The study results have managerial and theoretical implications for managers and practitioners.

Keywords: Non-performing loans, Bank profitability, Commercial banks, Capital Adequacy.

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1. INTRODUCTION

Financial institutions are important in the economic growth of the country because they support the smooth lending of essential financial services, such as credit facilities, which are crucial to economic development and growth. Thus, the banking industry assists in distributing capital and facilitating transactions, leading to investment opportunities in the productive sector and promoting economic progress (Aliu & Çollaku, 2021). A strong banking system is a key indicator of an economically viable country. Banks play a significant role in the long-term economic growth and prosperity of the country through the provision of credit services that benefit their customers (Anh & Huong, 2024).

Commercial banks in Kenya have played a crucial role in driving GDP growth through the capacity of banks to generate capital for investment. They provide financial services to firms and investors through grants for short and long-term loans. The banking industry can be classified based on the quality of its assets and profit margin compared to other businesses. Since loans contribute significant operating income, they are the primary asset and play a crucial role in the banking industry (Ongore & Kusa, 2013). However, the greatest threat facing the banks is debt. Therefore, Banks should carefully evaluate credit risk and allocate adequate funds for bad and doubtful debts, which can potentially substantially reduce risk. However, when there are more non-performing loans (NPLs) than usual, the protections are insufficient to keep the banks safe (Stephen Kingu et al., 2018).

According to Waweru & Kalani (2009) Many financial institutions failed in Kenya since 1986, indicating that Kenya experienced financial difficulties, with the escalating failure of major banks. The government and banking sector have formulated policies that attempt to regulate and reduce nonperforming loans, which are among the reasons the banking industry faces challenges attributed to the failure of the banking sector in Kenya. Establishing credit reference bureaus (CRB) is one of the measures taken to consider borrowers' credit scores to reduce NPLs (CBK, 2022).

However, an increase in gross non-performing loans will significantly increase risks to banks, which may lead to difficulties in the financial sector and the economy. Equally, failure

to manage non-performing loans over a long period gradually affects commercial bank profitability (Kajirwa & Wekesa, 2020).

Consequently, non-performing loans usually result in high loan provisioning, which causes a decline in profits for many banks and gradually minimizes the bank sector's ability to play its role in the development of the economy (Karim et al., 2010).

Although some previous research has confirmed the effect of non-performing loans on profitability, other studies have failed to demonstrate the existence of these impacts. Therefore, this study focused on the effect of non-performing loans on the profitability of commercial banks in Kenya.

This study examines the relationship between the profitability of banks and non-performing loans in Kenya. The study focused on how non-performing loans affect profitability in Kenya. This study aims to investigate the impact of non-performing loans on the profitability of banks in Kenya.

There will be five sections in this paper. The first section introduces bank profitability; the second reviews related literature; the third describes the research methodology; the fourth discusses the research findings, and the fifth section presents the conclusion.

2. LITERATURE REVIEW

2.1. Overview of the Banking Sector

The Kenya banking industry comprises the Central Bank of Kenya, the regulatory authority of all financial institutions operating in Kenya. As of December 31, 2023, there were 39 commercial banks, of which 37 were privately owned; 20 were locally owned (the controlling shareholders are domiciled in Kenya), while 17 were foreign-owned, and public banks 2. All licensed forex bureaus, microfinance banks, credit reference bureaus, money remittance providers, Digital credit providers, and non-operating bank holding companies are privately owned (CBK,2022).

2.2. Theoretical Review

Many banks have failed in the past due to insolvency, which has been linked to a high level of non-performing loans (Fofack, 2005). Similarly, ineffectively reducing levels of non-performing loans may result in a bank collapse (Richard et al., 2008). Kamra (2013) argues that non-performing loans affect the profits of banks through reducing interest income and eroding current profits and capital base through provisions. Non-performing loans accounted for about

75% of the total loan portfolios of over 60 banks that collapsed during the 1997 financial crisis in Indonesia (Caprio & Klingebiel, 2002).

Non-performing loans are considered determinants of profitability because high levels of non-performing loans adversely affect banks net profit through the provisioning of doubtful debts and write-offs of bad debts, which generally affect profitability and capital levels (Muriithi, 2013). Subsequently, when non-performing loans are more than bank capital in a relatively large number of banks, it can compound into bank problems, eventually resulting in a financial crisis (Karim et al., 2010). According to Kithinji (2010), a possible relationship was found between high levels of non-performing loans and low profitability. Information asymmetry theory and the bad management hypothesis are the theoretical perspectives that informed this research, as well as the development of the hypotheses used to analyze the relationship between NPL and Profitability.

2.2.1. Information Asymmetry Theory

According to theory, asymmetric information arises when one party in a transactional interaction has more knowledge regarding the transaction than the other (Arkelof, 1970). The Asymmetric information literature in the financial decision domain examines the effects of choices depending on the disparity in information that each party has access to (Mishkin, 1992). Lenders offering credit facilities to borrowers face the uncertainty of loan repayment, as they cannot observe the borrower's characteristics and actions, thus making it difficult to assess the borrower's creditworthiness (Giovanni & Pietro, 1998). Therefore, adverse selection results in the displacement of high-quality borrowers by low-quality borrowers. Thus, it eventually degrades the overall quality of bank loan portfolios and contributes to the accumulation of non-performing loans, decreased profitability, and capital loss (Makri et al., 2014).

2.2.2. Bad management hypothesis

The first presented by Berger & DeYoung (1997) notes that bank management often allocates more resources to managing and monitoring non-performing loans in response to the rise in these loans due to adverse selection. Thus, operating expenses rise faster than interest income over time, ultimately leading to a higher cost-to-income ratio. Therefore, poor bank management is indicated by a higher cost-to-income ratio, which indicates poor loan portfolio underwriting, monitoring, and control (Özgüler & Vardar, 2015). Therefore, we expect a negative relationship between non-performing loans and ROA as a proxy for profitability. Consequently, it is hypothesized that the higher the non-performing loans, the lower the ROA of banks.

Karim et al. (2010) results support the bad management hypothesis proposed by Berger & DeYoung (1997), suggesting that poor management in banking institutions results in poor quality loans and contributes to the increase in the level of non-performing loans and a decrease in profitability.

2.3. Empirical Literature Review

The literature review points out that there are a lot of empirical studies that attempt to look at non-performing loans and other factors that affect bank profitability. Thus, several researchers have examined non-performing loans and other factors affecting banking sector profitability in different countries, producing inconsistent results (Roman & Tomuleasa, 2014); Boahene et al., 2012). Roman & Tomuleasa (2014) conducted a study on 86 commercial banks for a period from 2003 to 2011 on the impact of internal and external factors on the profitability of banks in EU countries, revealing that the increase in non-performing loans had a negative effect on credit risk, resulting in a significant impact on profitability.

Pastory & Kaaya (2013) studied the relationship between credit risk and bank performance, found that credit risks and bank profitability are negatively correlated. Similarly, poku-mensah (2019) examined the impact of credit risk on the profitability of Banks in Ghana, revealed that an increase in non-performing loans reduces the profitability of banks in Ghana.

Boahene et al (2012) concur with the study of Kithinji (2010), who studied the effect of credit risk on the performance of commercial banks in Kenya, found that credit risk has an insignificant impact on the profitability of commercial banks, indicating that factors other than credit risk also affect non-performing loans. Non-performing assets also contribute to the increase in profits.

Alshebmi et al. (2020) Examined non-performing loans and their impact on bank profitability in the banking sector in Saudi Arabia. The results of the correlation analysis showed that the NPL ratio had a weak and negative relate with the capital adequacy ratio. Additionally, there was a weak negative relationship between the NPL ratio and the return on assets ratio, bank liquidity risk, lending risk, and gross domestic product growth.

Prasad Bhattarai (2020) investigated the effects of non-performing loans on the profitability of commercial banks in Nepal. The study concluded that non-performing loans and other factors have a significant role in determining profitability among the study variables. Inflation does not significantly affect Profitability. However, the effect of non-performing loans on profitability is significant.

In the Kenyan context, Mombo (2015) conducted research on the effect of non-performing loans on the financial performance of deposit-taking microfinance institutions in

Kenya. The study used secondary data obtained from the microfinance institutions. The study established that nonperforming loans in deposit-taking microfinance institutions account for a significant percentage of the difference in the institutions' profitability. Kavata (2016) also researched the effect of non-performing loans on the financial performance of commercial banks in Kenya. Employed a multiple linear regression model to determine the relationship between the NPLs and the financial performance of commercial banks. The relationship between these 'bad loans' and the financial performance, as represented by ROA, was regressed. The study indicates a negative effect of the nonperforming loan ratio on return on assets, confirming that nonperforming loans negatively affect the profitability of commercial banks in Kenya.

Kajirwa & Wekesa (2020) determined the effect of non-performing loans on the profitability of the banking industry in Kenya. The research discovered that non-performing loans have a significant negative impact on the profitability of the Kenyan banking industry.

Therefore, the literature reviewed has led to the formulation of the following hypothesis: H01: Non-performing loans have no significant impact on the banking industry's profitability.

3. RESEARCH METHODOLOGY

The research employed a descriptive research design to utilize secondary data obtained from the Central Bank of Kenya, the annual supervisory report, and published financial statements of commercial banks licensed and registered under the Banking Act, Chapter 488, which existed from 2014 to 2022. A sample of 31 out of a population of 39 banks was purposefully selected based on the availability of financial data. It was categorized based on asset size, loan size, liabilities positions, capital, and earnings. The designated banks represent approximately 80% of all banks, making this sample sufficiently representative of the population. The study employed multiple regression analysis techniques and descriptive statistics to determine the impact of non-performing loans in banks in Kenya. Similarly, the Ordinary Least-Squares regression method was employed to examine the Fixed Effects and Random Effects techniques.

3.1. Measurement of Variables

3.1.1 Dependent Variable

The dependent variable for this research is Return on Assets (ROA), which is calculated by dividing net profits after tax by total assets at the end of the financial year. ROA indicates

performance and measures how profitable banks are relative to their assets, meaning how effectively management utilizes the assets of the company to generate profit. Thus, a higher ROA indicates an efficient and effective use of the assets to make profits. The ROA of this research was obtained from the annual supervisory financial report from the Central Bank of Kenya.

3.1.2 Independent Variable

According to Kieu Oanh et al. (2020), the Non-Performing Loans (NPL) ratio is calculated by dividing non-performing loans by total loans and advances. It is thus used as an indicator of credit risk. The higher the NPL ratio, the poorer the credit quality, and the higher the risk that more loan losses will be charged against income.

3.1.3 Control Variables

Liquidity ratio (LR) is calculated by dividing net loans by total deposits. It is a measure of the banks liquidity position. The higher the loan balances relative to deposits, the lower the liquidity level.

Capital adequacy ratio (CAR) is the ratio of capital to the sum of a risk-weighted bank's assets. This ratio measures a bank's capital relative to its risk-weighted credit exposure. In the context of this study, CAR is defined as the ratio of Shareholders Funds or equity to Total Assets.

Gross Domestic Product (GDP) is used as a proxy for the cyclical behavior of economic activity for this thesis. Other studies used A similar measure as a proxy (Athanasoglou et al., 2005; Sufian, 2012) on the relationship between macroeconomic activities and bank profitability.

Table 1: Measurement of Variables Impacting ROA

Variable	Measurement Definition	Symbol
Dependent Variable		
ROA	Net Profits to Total Assets	ROA
Independent Variable		
NPL	Non-performing loans and Total gross loans ratio	NPL
Liquidity	Total Loan to Total Deposits	LR
Capital Adequacy	Shareholders Funds to Total Assets	CAR
GDP	Yearly GDP growth Rate	GDP

3.2. Econometric methodology

Multiple regression models were created based on the hypothesized relationships between the variables to meet the study's objectives. The research utilized a modified version of the econometric model (Khizer et al., 2011). A regression model is estimated to examine the relationship between NPL and ROA. The model is expressed as:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Whereas;

Y = Profitability measured using Return on Assets (ROA) α = Constant parameter/Intercept

β = Coefficients of independent variables

X_2 - X_4 = Coefficients of control variables.

'e' = error term Where,

X_1 = Non-Performing Loan (NPL), X_2 = Loan to Deposit Ratio, X_3 = Shareholders Funds/Total Assets, X_4 = GDP growth rate (Control variable).

Three approaches of panel estimation were employed in this study: Fixed Effects (FE) Model, Random Effects (RE) Model, and Pooled Regression Model (OLS)

It assumes that every subject is identical, thereby discounting the possibility of heterogeneity (individuality or uniqueness) among the several study participants in the regression model (Wooldridge, 2010). The Fixed Effects (FE) model provides each entity with an intercept value that captures the variations between entities to account for heterogeneity or individuality among cross-section units (Gujarati and Porter, 2009). Conversely, the Random Effects (RE) Model operates under the presumption that there is no correlation between the independent variables included in the model and the unobserved individual heterogeneity. The RE estimator assumes the Intercept of a specific unit to be a random component selected from the broader population with a constant mean value.

The Hausman test has a p-value of 0.0494 and a Chi-Square of 9.52, as indicated in Table 4. Because of this, the findings of the fixed effects model have been the primary focus of discussion and results.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1. Descriptive Statistics

Table 2 illustrates the outcomes, which indicate a low minimum ROA of -10% because of accumulated losses that sharply rose in 2021. 2% is the mean return on assets, and 7% percent is the maximum. The percentage of non-performing loans (NPLs) varies greatly, with a mean of 15% and a range of 0.1% to 48%. The minimum capital adequacy ratio of 14.5 % set by the CBK complies with the average capital ratio (CAR) of 22 percent. The average liquidity (LQDT) value is 120%, higher than the minimum values CBK considers acceptable by 20%. Over the previous eight years, GDP growth has averaged 5%; the most significant increase of 7.6% occurred in 2022, while the lowest growth was -3% in 2020. The substantial success in every service sector during 2022, including transport and storage, financial and insurance, information and communication, lodging and food services, was the cause of the significant increase. Table 2 below shows the descriptive results for the variables affecting ROA.

Table 2 Descriptive Statistics of Variables Impacting ROA

Variables	Obsvs	Mean	median	Max	Min	SD			
ROA	279	0.02	0.03	0.07	(-0.10)	0.02	(-1.32)	6.20	
NPL	279	0.15	0.12	0.48	0.01	0.10	1.15	3.89	
CAR	279	0.22	0.20	0.49	0.01	0.08	0.84	3.92	
LR	279	12.30	0.80	1082.00	0.00	107.31	9.45	90.72	
GDP	279	0.05	0.05	0.09	-0.04	0.02	-1.10	4.94	

Source: Researcher,2024

4.2 Correlation Results

To determine if there was a significant correlation between non-performing loans, GDP growth rate and return on assets, capital adequacy ratio, and liquidity, Pearson r was calculated. According to the results, there is no correlation between ROA and GDP, although there is a correlation between ROA and NPLs and capital adequacy ratio. The dependent and independent variables correlation matrix reveals that NPL correlates statistically negatively with ROA. The findings demonstrate that although the capital adequacy ratio (CAR) has an insignificant correlation with GDP and the liquidity ratio, it is positively and significantly connected with ROA. Table 3 below presents the correlation matrix table of the variables affecting ROA.

Table 3: Correlation of variables with ROA

	ROA	NPL	CAR	LR	GDP
ROA	1				
NPL	-0.4376*	1			
CAR	0.1626*	-0.2706*	1		
LR	-0.1068	0.022	0.1274*	1	
GDP	0.0195	-0.0621	-0.0384	0.0034	1

Source: Researcher. 2024.*Significant at 5% level,**significant at 10% level.

4.2. Regression Results

The coefficient estimate for non-performing loans (NPL) is negative and statistically significant, implying that the ROA decreases as non-performing loans increase. This relationship may be explained by the fact that the income statement and balance sheet are affected when customers default to pay back the interest and principal. The bank's asset base is reduced when customers fail to repay principal amounts, and the principal amount is written off as expenses on the income statement, which decreases and affects bank profits. Similarly, nonpayment of customer interest on loans reduces bank revenue and profitability. This finding is consistent with the information asymmetry theory and the bad management hypothesis, which contend that adverse selection contributes to an increase in non-performing loans (NPL) and that management's incapacity to regulate operating efficiency ultimately results in decreased profitability over time. Thus, the findings are consistent with the hypothesis that increasing the level of non-performing loans will decrease ROA.

The study's results concur with the findings of (Kithinji, 2010; Kolapo et al. 2012; and Khizer et al., 2011). The ratio of the estimated coefficient of liquidity (LR) is statistically significant and negative. The results show that bank profits decline as the loan-to-deposit ratio rises, implying that as the ratio increases. It exposes the company to a greater danger of liquidity risk and financial difficulties. A greater ratio indicates that the bank is using more costly means, like pricey deposits, debt, and equity financing, to fund its loan book since it has exhausted its ability to fund loans from its deposits. As a result, its profitability levels decrease. These findings concur with the results of Kithinji, (2010), and Kolapo et al. (2012). Capital Adequacy Ratio (CAR) has a statistically significant estimated positive coefficient. The findings show that a rise in the capital adequacy ratio can explain the higher tendency in bank profits. Thus, this might be explained by banks with larger capital ratios relying more on their capital to finance asset expansion. Higher profitability results from less reliance on pricey outside funding capital. These results support those of Berger & DeYoung (1997) and Ozili (2015). A

rise in GDP is linked to a fall in ROA. According to the findings, the GDP is statistically insignificant to the bank's profitability. However, GDP cannot account for bank profitability levels. This could be explained by the fact that higher economic activity is related to a reduced default rate.

Table. 4 Regression Results on Variables

Variable	Pooled		Fixed		Random	
	Coef.	P- Value	Coef.	p-value	Coef.	p-value
ROA						
NPL	-0.102	0.000***	-0.048	0.003**	-0.062	0.000***
CAR	0.019	0.269	0.070	0.010**	0.053	0.017**
LR	-0.0000	0.053*	-0.000	0.125	-0.000	0.074*
GDP	-0.004	0.945	0.008	0.894	0.003	0.950
Constant	0.034	0.000	0.015	0.030	0.021	0.002
R-squared	0.580		0.676		0.711	
Prob (F-statistic)	0.0000		0.0000		0.0000	
Hausman Test					0.0494	

Source Author 2024

Note *, **, and *** mean significance at 10%,5%, and 1% respectively

5. CONCLUSION

Panel data approaches were employed in this study to investigate how non-performing loans (NPLs) affect bank profitability. According to the study, there is a correlation between the increase in non-performing loans and a decrease in ROA. These findings provide credibility to the information asymmetry theory and the bad management hypothesis, which contend that higher exposure to credit risk as measured by non-performing loans (NPLs) is typically linked to higher operating expenses and decreased profitability. There are several consequences for researchers, practitioners, and regulators arising from the findings of this study. According to practitioners, bank managers must carefully review client data and information throughout the credit analysis stage to decrease information asymmetry, reduce information gaps and improve access to comprehensive, accurate, and trustworthy data about borrowers; management must also make significant investments in robust credit information systems.

Additionally, bank management must use cost-effective techniques to manage their loan portfolio efficiently. On the other hand, Regulators must carefully monitor capital sufficiency

and bank operational efficiency ratios, focusing more on the bank's capital position and cost-to-income ratio changes. In particular, authorities ought to create rules and oversight instruments that would set off early alert systems for prospective bank collapses brought on by the build-up of non-performing loans.

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