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Credit Risk Management, Firm Age and Financial Performance: Evidence from Commercial Banks in Kenya

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Abstract

This study examined the effect of credit risk management on financial performance of commercial banks in Kenya and tested whether firm age moderates this relationship. Using secondary panel data for 42 commercial banks over the period 2013–2022, credit risk management was captured using indicators such as delinquency rate, value at risk, and distance to default, while financial performance was assessed using standard bank performance metrics. Panel regression analysis was employed to estimate the direct effect of credit risk management on financial performance and the interaction effect between credit risk management and firm age. The results show that credit risk management significantly influences financial performance; however, firm age does not significantly moderate the relationship between credit risk management and financial performance among commercial banks in Kenya. Based on the findings, the study concludes that effective credit risk management remains a critical determinant of financial performance in commercial banks, regardless of their age. The absence of a significant moderation effect implies that both young and mature banks benefit similarly from sound credit risk practices. The study recommends that bank managers consistently strengthen credit appraisal, monitoring, and recovery mechanisms, while policymakers and regulators should continue enforcing robust credit risk management frameworks across the banking sector without differentiating requirements based on firm age.

Keywords: *Credit risk management, financial performance, delinquency rate, value at risk, distance to default, and firm age.*

1. Introduction

Credit risk management is widely acknowledged as a core determinant of financial performance in the global banking industry, given that credit exposure constitutes the largest source of risk for commercial banks. Poor credit risk practices were a major contributor to past banking crises, prompting global regulators and rating agencies to emphasize stronger risk governance and monitoring frameworks (Moody, 2019). Effective credit appraisal and monitoring systems have

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been shown to reduce loan default rates and stabilize earnings, thereby enhancing profitability and capital adequacy (Basel Committee, 2018). Empirical studies from developed economies further indicate that banks with robust credit risk controls experience lower earnings volatility and improved long-term performance outcomes (Ghosh, 2017; Joseph & Prakash, 2019).

Within developing and emerging economies, credit risk management assumes even greater significance due to heightened macroeconomic uncertainty, weaker borrower information systems, and exposure to sectoral shocks. Studies conducted in African banking systems reveal that non-performing loans, loan loss provisions, and borrower credit quality significantly influence bank profitability and solvency (Atsango, 2018). Research by Kithinji (2017) demonstrates that inadequate credit monitoring increases default risk, negatively affecting return on assets and equity. At the same time, firm-specific characteristics such as firm age influence organizational learning, risk appetite, and operational maturity, which may affect how effectively banks translate credit risk controls into financial performance (Ndegwa, 2019; Mwangi & Wanjau, 2020).

In the Kenyan context, commercial banks continue to grapple with elevated credit risk despite regulatory reforms and enhanced supervisory oversight by the Central Bank of Kenya. Persistent fluctuations in non-performing loans have raised concerns regarding the effectiveness of credit risk management practices across banks of different ages (CBK, 2022). Empirical evidence suggests that while older banks may benefit from experience and established risk systems, younger banks may adopt more aggressive lending strategies that heighten credit exposure (Muriithi, 2018; Oduor, 2020). However, existing studies in Kenya largely examine credit risk management and financial performance without explicitly accounting for the moderating role of firm age. This creates an empirical gap that necessitates a focused investigation of how credit risk management interacts with firm age to influence financial performance among commercial banks in Kenya, as supported by the literature reviewed in the thesis.

Research Problem

Despite the central role of credit risk management in sustaining bank profitability and stability, commercial banks globally continue to experience performance volatility arising from persistent credit defaults and deteriorating asset quality. International evidence shows that weak credit

appraisal and monitoring systems significantly contribute to rising non-performing loans and erosion of shareholder value (Moody, 2019). Even with strengthened regulatory frameworks such as Basel III, banks still face challenges in aligning risk management practices with dynamic market conditions, resulting in uneven financial outcomes across institutions (Basel Committee, 2018; Ghosh, 2017). These challenges raise concerns about whether existing credit risk management mechanisms are sufficiently robust to support sustained financial performance in diverse banking environments.

In developing economies, and particularly within Sub-Saharan Africa, the problem is compounded by macroeconomic instability, information asymmetry, and limited credit information infrastructure. Empirical studies indicate that high levels of non-performing loans continue to suppress bank profitability and weaken balance sheets despite regulatory interventions (Atsango, 2018; Kithinji, 2017). Furthermore, while firm-specific attributes such as firm age are associated with differences in managerial experience, institutional learning, and risk tolerance, most studies treat banks as homogeneous entities when assessing credit risk outcomes (Ndegwa, 2019; Mwangi & Wanjau, 2020). These limits understanding of whether younger and older banks respond differently to credit risk management practices in translating risk controls into financial performance.

In Kenya, the banking sector has recorded recurrent increases in non-performing loans, raising concerns about the effectiveness of credit risk management practices across commercial banks. Although regulatory oversight by the Central Bank of Kenya has intensified, variations in financial performance persist among banks operating under similar regulatory conditions (CBK, 2022). Existing local studies largely focus on the direct relationship between credit risk management and financial performance, with limited attention given to the moderating influence of firm age (Muriithi, 2018; Oduor, 2020). This presents a clear empirical gap in the Kenyan banking literature, necessitating a focused examination of how firm age conditions the relationship between credit risk management and financial performance among commercial banks in Kenya.

Literature Review

Theoretical Foundation

Portfolio theory provides the anchor lens for explaining why credit risk management should translate into stronger financial performance when banks manage the risk–return tradeoff of their loan portfolios through diversification and disciplined credit portfolio decisions. The thesis grounds this argument in Markowitz’s (1952) proposition that portfolio construction and risk balancing are central to achieving optimal outcomes, while also noting that banks often operationalize risk control using models linked to portfolio choices such as value-at-risk (Seibel, 2012). Within this logic, credit risk management indicators such as delinquency rate, value at risk, and distance to default reflect the quality of portfolio management decisions, and effective control of these indicators reduces credit losses and stabilizes returns (Margrabe, 2007). At the same time, the thesis recognizes key limitations of portfolio theory, including overreliance on historical data and assumptions of stable correlations, which may not hold during market disruptions (Kairu, 2009; Essendi, 2013).

Financial intermediation theory explains credit risk management and financial performance by emphasizing banks’ intermediary function in mobilizing deposits and allocating credit under conditions of transaction costs and information frictions. As presented in the thesis, Diamond (1984) frames banks as institutions that add value by reducing transaction costs and improving the efficiency of financial markets, and this efficiency role becomes more critical when banks must assess borrower creditworthiness continuously (Adebayo, 2017). The theory aligns with credit risk management because screening and monitoring of borrowers reduces default likelihood and improves the quality of lending outcomes, thereby supporting performance. However, the thesis also highlights a critique that traditional intermediation theory underemphasizes risk management as a central banking function, with scholars arguing for its extension to better capture modern financial sector realities (Levine et al., 2000; Scholtens & Van Wensveen, 2000). In the study context, this theoretical perspective supports linking credit risk controls to performance outcomes while recognizing that the theory’s classical framing may not fully capture contemporary risk-management complexities.

Information asymmetry theory and Merton's default risk theory jointly justify why credit risk management indicators are necessary for predicting and controlling default outcomes that ultimately shape bank performance. The thesis draws on Akerlof (1970) to explain that unequal information between borrowers and lenders creates adverse selection and moral hazard, making loan decisions vulnerable unless banks enforce disclosure, screening, and monitoring systems that reduce informational gaps. Building on this, the thesis applies Merton's (1970) default risk logic to interpret default as a function of borrowers' capacity to meet obligations, making the assessment of default probability central to credit analysis and risk pricing. Together, these theories support the study's operationalization of credit risk management through measures that capture repayment stress and default distance, and they provide a basis for examining whether bank characteristics such as firm age condition how effectively these risk controls translate into financial performance (Ombaba, 2013; Orichom & Omeke, 2020).

Empirical Review

Empirical studies from global contexts consistently demonstrate that credit risk management is a significant determinant of financial performance in the banking sector. Studies conducted in developed economies show that high delinquency rates and weak loan monitoring systems are strongly associated with declining profitability and capital erosion (Moody, 2019). Empirical evidence from European and North American banks indicates that credit risk indicators such as non-performing loans and value at risk have a statistically significant negative effect on return on assets and return on equity (Ghosh, 2017; Joseph & Prakash, 2019). These studies affirm that effective credit risk identification and control mechanisms enhance earnings stability and reduce exposure to systemic shocks, thereby improving overall bank performance.

In emerging and developing economies, the relationship between credit risk management and financial performance is even more pronounced due to heightened economic volatility and weaker institutional frameworks. Atsango (2018), studying banks in East Africa, found that rising non-performing loans significantly undermine profitability and liquidity positions. Similarly, Kithinji (2017) established that inadequate credit appraisal and monitoring practices increase default risk and negatively affect financial performance among commercial banks. These findings underscore the critical role of structured credit risk frameworks in mitigating losses and sustaining

performance in environments characterized by information asymmetry and macroeconomic instability.

Empirical evidence from Sub-Saharan Africa further highlights the importance of borrower screening and credit monitoring in improving bank performance. Studies by Ndegwa (2019) and Essendi (2013) reveal that banks with robust credit risk assessment tools experience lower default rates and improved operational efficiency. However, these studies largely focus on direct effects of credit risk indicators on performance, with limited attention to how firm-specific characteristics influence this relationship. As a result, the heterogeneity of banks in terms of experience, institutional maturity, and learning capacity remains insufficiently explored in empirical banking literature.

Within the Kenyan banking sector, several studies confirm the existence of a significant relationship between credit risk management and financial performance. Muriithi (2018) found that non-performing loans have a negative and statistically significant effect on bank profitability in Kenya. Oduor (2020) similarly reported that loan loss provisions and credit monitoring efficiency significantly influence return on assets among Kenyan commercial banks. Despite these insights, most local studies examine credit risk management in isolation and do not integrate firm age as a conditioning variable that may shape risk management effectiveness and financial outcomes.

Empirical literature on firm age suggests that older firms benefit from accumulated experience, institutional learning, and established systems, which can enhance risk management effectiveness and performance outcomes (Mwangi & Wanjau, 2020). Conversely, younger firms may exhibit aggressive growth strategies that increase exposure to credit risk (Muriithi, 2018). However, few empirical studies explicitly test the moderating role of firm age on the relationship between credit risk management and financial performance, particularly within the Kenyan banking sector. This empirical gap justifies the need for a focused examination of how firm age interacts with credit risk management practices to influence financial performance among commercial banks in Kenya.

Research Methodology

The study adopted a positivist research philosophy and an explanatory research design to examine the relationship between credit risk management, firm age, and financial performance of commercial banks in Kenya. The target population comprised all licensed commercial banks operating in Kenya during the study period, with a census approach employed to eliminate sampling bias and enhance generalizability of the findings. Secondary panel data covering a ten-year period were extracted from audited financial statements, Central Bank of Kenya supervisory reports, and published bank disclosures, ensuring consistency and reliability of the data used. Credit risk management was operationalized using delinquency rate, value at risk, and distance to default, while financial performance was measured using standard accounting-based indicators. Firm age was measured as the number of years since a bank's establishment and incorporated as a moderating variable.

Data analysis involved both descriptive and inferential techniques. Panel regression models were employed to estimate the effect of credit risk management on financial performance and to test the moderating role of firm age through interaction terms. Diagnostic tests were conducted to confirm the suitability of the panel model, including tests for multicollinearity, heteroskedasticity, and autocorrelation. Model selection was guided by the Hausman specification test to determine the appropriate estimation technique. The findings were presented using tables and interpreted in line with the study objectives, theoretical foundations, and existing empirical evidence, ensuring methodological rigor and robustness of conclusions.

Findings and Discussion

The three steps for moderation were used to achieve the objective of this study. In step 1 (Model 1), regression analysis estimated the relationship between financial performance and each of the credit risk management indicators (delinquency rate, value at risk and distance to default). The overall model was statistically significant because the F-test statistic was statistically significant ($F(3, 290) = 143.24, p < 0.05$). The study findings show that the delinquency rate ($= -1.004, p < 0.05$) of commercial banks in Kenya significantly predicts financial performance of commercial banks in Kenya, suggesting that for every unit rise in delinquency rate, the financial performance decreases by 1.004 units. The findings further showed that value at risk ($\beta = -1.646, p < 0.05$) is

also a significant predictor of financial performance. This suggests that for every unit rise in value at risk, the financial performance decreases by 1.646 units. The findings further showed that distance to default ($\beta = 1.028$, $p < 0.05$) is also a significant predictor of financial performance. This suggests that for every unit rise in distance to default, the financial performance improves by 1.028 units.

Table 1: Credit Risk Management Indicators and Financial Performance

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|---------|-----------|-------|
| Delinquency rate | -1.004* | 0.021 | 0.007 |
| Value at risk | -1.646* | 0.234 | 0.000 |
| Distance to default | 1.028* | 0.036 | 0.001 |
| _cons | 1.234* | 0.461 | 0.000 |
| Model Summary | | | |
| R-squared | 0.5613 | | |
| F(3, 290) | 143.24 | | |
| Prob > F | 0.0000 | | |
| Observations | 291 | | |

* $p < 0.05$

In Step 2 (Model 2), the association among the criterion, moderator, and predictor variables (credit risk management indicators, measured by delinquency rate, value at risk and distance to default) was assessed using the panel regression analysis Hausman test as a guide. A statistically significant regression model is required. To determine whether firm age moderates the relationship between financial performance and delinquency rate, financial performance was regressed on delinquency rate and firm age. F-test statistics were statistically significant, which means that the regression model was statistically significant, $F(2, 290) = 3.90$, $p < 0.05$. Additionally, Table 2 reveals that the delinquency rate model regression coefficient was statistically significant ($p < 0.05$)

Table 2: Delinquency Rate, Firm Age and Financial Performance

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|---------|-----------|-------|
| Delinquency rate | -1.393* | 0.499 | 0.006 |
| Firm age | 0.017 | 0.204 | 0.935 |
| _cons | 4.164* | 0.123 | 0.000 |
| R-squared | 0.031 | | |
| F(2, 290) | 3.90 | | |
| Prob > F | 0.0215 | | |

* $p < 0.05$

In step 3, Model 3, financial performance was regressed on firm age, credit risk management indicators, and Interaction term created by multiplying the centered credit risk management indicators (independent variable) and centered moderator (firm age). The interaction term should be statistically significant if there is a moderating influence.

The relationship between delinquency rate (independent variable), firm age (moderator), the interaction term (age*delinquency rate), and financial performance (dependent variable) was estimated using Fixed-effects regression. The results are as shown in Table 3.

Table 3: Interaction Term for Delinquency Rate and Firm Age

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|---------|-----------|-------|
| Delinquency rate | -1.620* | 0.522 | 0.002 |
| Firm age | 0.132 | 0.219 | 0.547 |
| Age*delinquency rate | -2.245 | 1.572 | 0.155 |
| _cons | 4.110* | 0.129 | 0.000 |
| R-squared | 0.040 | | |
| F(3, 290) | 3.29 | | |
| Prob > F | 0.0213 | | |

* p<0.05

This study showed that delinquency rate ($\beta= 1.620$, $p<0.01$) significantly influences financial performance. However, firm age ($\beta= 0.132$, $p>0.05$), has no significant influence on financial performance. The result of the F-test was statistically significant ($p<0.05$). The R^2 -value of 0.040 indicates that the independent variable (delinquency rate), the moderator (firm age), and the interaction term (age*delinquency rate) account for 4% of the variance in financial performance. Even though the regression model was statistically significant, Table 3 shows that the interaction term (age*delinquency rate) was not.

To determine whether firm age moderates the relationship between financial performance and value at risk, financial performance was regressed on value at risk and firm age. F-test statistics were statistically significant, which means that the regression model was statistically significant, $F(2, 290) =6.01$, $p<0.05$. Furthermore, the model regression coefficient of value at risk was statistically significant ($p < 0.05$), per Table 4.

Table 4: Value at Risk, Firm Age and Financial Performance

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|---------|-----------|-------|
| Value at risk | -1.637* | 0.472 | 0.001 |
| Firm age | 0.027 | 0.202 | 0.893 |
| _cons | 5.440* | 0.276 | 0.000 |
| R-squared | 0.048 | | |
| F(2, 290) | 6.01 | | |
| Prob > F | 0.0028 | | |

* p<0.05

The relationship between value at risk (independent variable), firm age (moderator), the interaction term (age*value at risk), and financial performance (dependent variable) was estimated using Fixed-effects regression. This study indicated that value at risk ($\beta = -1.512$, $p < 0.05$) was a significant predictor of financial performance, as shown in Table 5. However, firm age ($\beta = 0.208$, $p > 0.05$) has no significant influence on financial performance. F-test statistics were statistically significant ($p < 0.05$), and therefore, the regression model was statistically significant. According to Table 5, the interaction term (age*value at risk) was also not statistically significant.

Table 5: Interaction Term for Value at Risk and Firm Age

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|---------|-----------|-------|
| Value at risk | -1.512* | 0.484 | 0.002 |
| Firm age | 0.208 | 0.255 | 0.415 |
| Age*Value at risk | 1.771 | 1.522 | 0.246 |
| _cons | 5.374* | 0.282 | 0.000 |
| R-squared | 0.053 | | |
| F(3, 105) | 4.47 | | |
| Prob > F | 0.0045 | | |

* p<0.05

To determine whether firm age moderates the relationship between financial performance and distance to default, financial performance was regressed on distance to default and firm age. F-test statistics were statistically significant, which means that the regression model was statistically significant, $F(2, 290) = 6.33$, $p < 0.05$. Furthermore, the model regression coefficient of distance to default was statistically significant ($p < 0.05$), per Table 6.

Table 6: Distance to Default, Firm Age and Financial Performance

| Financial performance | Coef. | Std. Err. | P>t |
|-----------------------|--------|-----------|-------|
| Distance to default | 1.801* | 0.375 | 0.000 |
| Firm age | 0.029 | 0.197 | 0.833 |
| _cons | 5.447* | 0.268 | 0.000 |
| R-squared | 0.057 | | |
| F(2, 290) | 6.33 | | |
| Prob > F | 0.0004 | | |

* p<0.05

The relationship between distance to default (independent variable), firm age (moderator), the interaction term (age*distance to default), and financial performance (dependent variable) was estimated using Fixed-effects regression. This study indicated that distance to default ($\beta= 1.534$, $p<0.05$) was a significant predictor of financial performance, as shown in Table 7. However, firm age ($\beta= 0.199$, $p>0.05$) has no significant influence on financial performance. F-test statistics were statistically significant ($p<0.05$), and therefore, the regression model was statistically significant. According to Table 7, the interaction term (age*distance to default) was also not statistically significant.

Table 7: Interaction Term for Distance to Default and Firm Age

| Financial performance | Coef. | Std. Err. | P>t |
|-------------------------|--------|-----------|-------|
| Value at risk | 1.534* | 0.391 | 0.001 |
| Firm age | 0.199 | 0.203 | 0.463 |
| Age*distance to default | 1.771 | 1.132 | 0.237 |
| _cons | 5.385* | 0.267 | 0.000 |
| R-squared | 0.057 | | |
| F(3, 290) | 4.83 | | |
| Prob > F | 0.0032 | | |

* p<0.05

Hypothesis H₀₁ investigated whether firm age has a moderation effect on the link between credit risk management and financial performance by suggesting that firm age does not significantly moderate the association between credit risk management and financial performance of Commercial banks in Kenya. Each of the credit risk management indicators was analyzed separately. This study indicates that firm age has no moderation influence on the link among credit

risk management indicators and the financial performance of commercial banks in Kenya since none of the credit risk management indicators fulfilled all the above Baron and Kenny's (1986) steps for testing the moderating influence as indicated in tables 1 to 7. So, the research failed to reject H_{01} .

Conclusions and Recommendations

The study concludes that credit risk management is a significant determinant of financial performance among commercial banks in Kenya, as evidenced by the statistically significant effects of delinquency rate, value at risk, and distance to default. Higher delinquency rates and increased value at risk were found to adversely affect financial performance, while greater distance to default enhanced performance, underscoring the importance of prudent credit appraisal, monitoring, and portfolio risk management. However, firm age did not significantly influence financial performance directly, nor did it moderate the relationship between credit risk management indicators and financial performance. The non-significance of all interaction terms confirms that the effectiveness of credit risk management practices in influencing bank performance is largely uniform across banks, regardless of their age.

Based on these findings, commercial banks in Kenya should prioritize strengthening credit risk management systems, particularly in reducing delinquency levels, managing portfolio risk exposure, and improving default prediction mechanisms, as these directly influence financial performance. Bank management should focus on adopting robust, data-driven credit risk frameworks that are applicable across institutions of different ages. Additionally, regulators and policymakers should continue enforcing standardized credit risk management guidelines across the banking sector without differentiation based on firm age, while encouraging continuous improvement in risk assessment tools and early warning systems to enhance overall banking sector stability and performance.

Further Research Directions

Future studies could extend this research by examining the moderating or mediating role of other firm-specific characteristics such as bank size, ownership structure, capital adequacy, or technological capability in the relationship between credit risk management and financial

performance. Further research may also incorporate macroeconomic variables such as interest rate volatility, inflation, and economic growth to assess how external conditions interact with credit risk management practices in influencing bank performance. In addition, comparative studies across different financial institutions or across countries within the East African region could provide deeper insights into contextual differences and enhance the generalizability of findings beyond the Kenyan banking sector.

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