BANK-SPECIFIC CHARACTERISTICS AND FINANCIAL DISTRESS OF COMMERCIAL BANKS IN KENYA

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ABSTRACT

Empirical evidence on the banking industry in Kenya indicates that local banks have been prone to financial distress. Commercial banks in Kenya have been experiencing cycles in Financial Distress and though such cycles have been precipitated by Bank-Specific Characteristics in other countries. It is still a challenge for empirical investigation as to know whether Bank-Specific Characteristics significantly affect Financial Distress in Kenya's banking industry. Subsequently, the basis of this research was to evaluate the connection between Bank-Specific Characteristics and Financial Distress of commercial banks in Kenya. Explicitly, the research was informed by determining the Income Diversification on Financial Distress of commercial banks in Kenya.

The Gambler's ruin theory and Modern portfolio theory provided theoretical anchorage to the research. Positivism research philosophy and causal research design were adopted for the study. The research was a census of all the 36 fully operational commercial banks in Kenya for the period 2011 through 2019. Secondary data was utilized in this study. Data sources included: websites of the CBK and individual Commercial Banks, audited financial statements and Annual supervision reports. Data analysis entailed use of descriptive and inferential statistics where the latter involved dynamic panel logistic regression analysis. Diagnostic tests undertaken in the study included: model specification, stationarity, autocorrelation, and multicollinearity tests. Hypotheses were tested at a significance level of 0.05. Data was displayed through frequency tables and graphs. Based on the dynamic panel Logistic regression analysis, the research revealed that Income Diversification had a significant effect on Bankometer Score (β=0.3504847, p=0.002) on commercial banks in Kenya. The study recommended that banks should diversify their revenue streams into new business areas and markets while considering risks and capabilities.

Keywords: Income Diversification, Bank Concentration, Bank Size, Deposit Mobilization, Profitability Growth, Bank Specific Characteristics and Financial Distress.

INTRODUCTION

In Kenya's banking system, there are banks that have collapsed, placed under receivership, or operating under statutory management. The consolidated annual bank supervision reports by the CBK for the period 2010-2014 depict that the banking industry experienced stability as profit before tax grew at average of 18% year from 74.3 billion to 141 billion but declined for the period 2015 to 134.0 billion then increased slowly to 159.1 billion in 2019 (Central Bank of Kenya, 2019). Based on a report by the Kenya Bankers' Association (2020), there has been an average decline of 78.6% on loan-to-deposit ratio for the period 2015-2019 in the banking system. The Bankometer model was utilized to forecast the financial distress of Kenyan commercial banks, and the results suggested that although some banks are in financial trouble, others were not. While utilizing the Bankometer S-score, Ouma and Kirori (2019) observed that between 2014 and 2017, medium and small-sized banks did not exhibit any significant differences in their financial stability and evidence suggested that they were all financially sound. Financial distress, as one of the disruptions in the banking industry, impedes banks' ability to intermediate financial flows, potentially leading to general economic crises (Akani & Kingsley, 2018).

Substantial literature has focused on the concept of financial distress given that many banks in Kenya have been getting profit warnings; however, they have exhibited several weaknesses. Firstly, the issue of financial distress has been covered in isolation but the causes that can be mitigated have not been addressed. Some of these studies include Kihooto, Omagwa, and Ronald (2016); Maina and Sakwa (2017); Karugu, Achoki, and Kiriri (2018); Ouma and Kirori (2019). Secondly, most studies measured financial distress utilizing the Altman Z-score. However, this study used the Bankometer model in addition to Zmijewski model that was found to be more superior in several studies (Ashraf & Tariq, 2016; Rahman, 2017; Africa, 2018; Erari, Salim & Idrus, 2013; Saputri & Krisnawati, 2020). In this context, the conceptual gap that this research will fill from the previously mentioned studies is the use of the Zmijewski and Bankometer models as proxy measures of financial distress of Kenyan commercial banks.

Empirical evidence from Kenya suggests that most of the existing studies have largely considered bank-specific determinants; bank size, corporate governance, bank funding, credit exposure, and regulatory capital on financial stability (Kiemo, Olweny, Muturi, & Mwangi, 2019), financial distress and profitability of tier three Kenyan Commercal Banks (Kimathi & Mungai, 2018), and capital adequacy ratios as indicators of financial distress (Karugu, Achoki, & Kiriri, 2018). None of these studies (Kiemo *et al.*, 2019; Karugu *et al.*, 2018; Kimathi & Mungai, 2018) have linked bank-specific characteristics to financial distress, indicating a very different focus that can prevent findings from being generalized. The international empirical literature focuses on financial distress prediction using the audit quality of banks (Jin, Kanagaretnam, & Lobo, 2011), real estate investments (Cole & White, 2012), internal controls on risk-taking (Jin, Kanagaretnam, & Lobo, 2013), and non-traditional banking activities income (DeYoung & Torna, 2013). As a result, this study will fill contextual and empirical gaps due to the deficiency of research on the link between bank-specific characteristics and financial distress in Kenyan commercial banks.

Methodologically, most of the existing studies have used research designs and models that limit the generalization of study findings: Such studies include Ongare and Kusa (2013), Manzaneque, Priego, & Merino (2016), Al-Hadi *et al.* (2017), Kassem and Sakr (2018) and Kiemo, Olweny, Muturi and Mwangi (2019). The aforementioned studies utilized descriptive research design and failed to consider bank concentration as the moderating variable. Additionally, these research did not take into account the dynamic logit model as adopted by Shehzad, De Haan, and Scholtens (2013) This enables the study to distinguish between true state dependence and the proclivity to experience a specific outcome at all times, when the latter is determined by unobservable factors. State dependence arises in a variety of economic contexts, including financial decisions, investment decisions, and brand selection, and can have a variety of policy implications. In view of these studies, the existing relationship between bank-specific characteristics and financial distress remains unclear and inconclusive hence the motivation for the current study.

Objective of the Study

To evaluate the relationship between bank-specific characteristics and the financial distress of Kenya's commercial banks.

Specific Objective

To ascertain the connection between Income Diversification and Financial Distress of Kenyan commercial banks.

THEORETICAL REVIEW

Modern Portfolio Theory

This theory was postulated by Harry Markowitz (1952). Markowitz' model was centered on the effect of portfolio diversification where the most important feature was on the securities held in each of the portfolio coupled with the covariance relationships among such securities (Megginson, 1996). Markowitz was the first to demonstrate quantitatively why and how diversification lowers risk. A portfolio is a collection of investments that investors make (Biswas, 2015). The choice of the optimal portfolio by banks is the difficult decision because they have to consider the current state of assets to be part of the portfolio (Francis & Kim, 2013). Modern portfolio theory delves into the distribution of capital through a portfolio of risky assets in order to develop a portfolio that is efficient (Emmer, Kratz, & Tasche, 2015). Therefore, the theory demonstrates that the most important and efficient portfolio for banks is the one that maximizes the expected returns while minimizing the risk (Kazan & Uludag, 2014).

In this study, income diversification of the bank that relies on the interest income to the non-interest income could be seen as a pursuit for maximizing returns while reducing risk (Stiroh, 2004). For most commercial banks to generate income from fees and commissions there are many risks involved, which the non-interest income seems not to entirely offset. Barros, Ferreira, and Williams (2007) discovered that banks with a large and diverse size have a permeability that affects them during times of crisis. This suggests that specialized banks with small loan portfolios reduce

asymmetric information problems. However, if the bank's size exceeds a certain threshold, it can be a source of distress.

Criticisms have been leveled against the modern portfolio theory since it uses mathematical statements or value projections based on what is expected as opposed to what exists. In this regard, historical measurements relating to volatility in the equations and asset returns form the basis of investor predictions, which suggest that they are subject to be altered by variables unknown or considered at the time of the equation. This theory has been linked to the income diversification variable of the study.

Gambler's Ruin Theory

The theory was postulated by Feller in 1968 and derived it from the principles of probability theory, whereby a gambler's financial outcome depends on by random chance. Using the analogy developed in the gambler's ruin theory in relation to financial institutions, a commercial bank begins with a positive, arbitrary amount of money and can realize profit with probability (p) and lose with probability (1-p) for every period (Lim, Lim Xiu Yun, Siwei, & Jiang, 2012). In this context, a bank is very optimistic of remaining profitable until it incurs a loss (Rabin & Vayanos, 2010). The theory is grounded on the random walk premise, which postulates that if something occurs more frequently than usual during a given period, it will occur less frequently in the future. The bank can be compared to a gambler who plays repeatedly with a chance of losing and continues to operate until its net worth reaches zero (Vilen, 2010; Ankomah, Oduro, & Amoah, 2020).

Banks continue to operate in uncertain environment and sometimes they loose and sometimes they are able to attain their business objectives. When a bank's net assets are negative, it is said to be in financial distress (Coad, Frankish, Roberts & Storey, 2016). With a given amount of funds, a net positive probability exists on the bank's cash flow being steadily negative over a certain timeframe, eventually culminating to bankruptcy (Aziz & Dar, 2006).

The theory presupposes that a bank has a fixed amount of cash that it enters and exits at random depending on the firm's operations. The bank would have either positive or negative cash flow at any given time (Lim *et al*., 2012). It is likely that a composite probability exists that a bank will experience a negative cash flow over a period of time. The operations of the bank will continue to a point where financial difficulties will be inevitable, leading to bankruptcy (Coad *et al*., 2016; Akani, & Kingsley, 2018). The theory is applicable to the study since demonstrates that net assets of banks coupled with cash flows ought to be managed internally to ensure net worth is greater than zero. Banks should avoid taking a probabilistic approach in their operations and strive to manage and control internal factors to realize stability.

While the Gambler Ruin theory indicates that the present value and cash flow processes of commercial banks involve probability distributions of returns (Coad *et al*., 2016), and might show the expected returns for each of the periods of investment, both of the processes fail to consider the ultimate failure or success of the investment with regard to specified risks. In fact, none of the processes can identify the risk of losing the total amount of capital invested that would be associated

with the desire to attain a given probability of success for the banks. The study is anchored on the Gambler Ruin theory

Empirical literature Review
Income Diversification and Financial Distress

Mamun, Meier, and Wilson, (2023) undertook a study to see whether activities that generate noninterest income had an impact on bank performance. Data from US Bank Holding Company (BHC) from 2003 to 2012 were used in the study. The 2008 financial crisis is a crucial part of the sample period for examining the performance and efficiency implications of noninterest income under conditions of high financial risk. The study concentrates on large banks with a consolidated asset value of $1billion or more and constructs variables using income statement and balance sheet data. Utilizing dependent variables, the study assesses effectiveness and efficiency in relation to noninterest revenue. The primary performance indicator is ROA, which is computed by dividing quarterly net income by total assets. However, ROA does not take into account changes in related risk. Cash flow volatility using ROA and risk-adjusted ROA is calculated to handle this problem. In this study, it was noted that between 2003 and 2012, noninterest income was reported to have fluctuated between 24% and 31% annually, contributing an average of 26.67% of BHC's operating income. Dynamic panel regression modeling was utilized in the research. The dynamic panel models exhibit order 1 autocorrelation, the validity of the instruments, and persistence in coefficient estimations. Due to the fact that a $1 improvement in revenue led to a $0.23 gain in bank profits, stakeholder activity boosts ROA, which is economically significant. The main impact is an increase in investment banking revenue; other factors are not significantly related. Activities that generate noninterest income raise performance and risk without necessarily benefiting BHCs. The findings demonstrated that noninterest income activities enhance asset utilization and risk-adjusted performance, primarily because assets are used more effectively. The analysis also shows that non-traditional non-interest revenue sources made possible by the Gramm-Leach-Bliley Act do not materially impair ROA or risk-adjusted ROA compared to pre- or post-crisis eras. This implies that regulations prohibiting BHCs from engaging in noninterest income-generating activities may require more thought. However, it was observed that additional study is necessary to properly comprehend the advantages and disadvantages of noninterest income.

Ochenge (2022) studied the relationship between bank performance and diversification (non-interest revenue). It used imbalanced panel data from 30 out of 42 Kenyan commercial banks, which represented 74% of all banks, and complete data from 2010 to 2020. Profitability was determined by ROA and ROE, while stability was evaluated using ZSCORE, SDROA, and SDROE. The percentage of non-interest revenue in total operational income was used to gauge diversification. The following were the control variables: liquidity, equity-to-assets ratio, deposits-to-assets ratio, and bank size. Covid*Div, an interactive term, investigated whether banks with greater diversification benefited from the current Covid issue the dynamic panel regressions are used. According to the study, diversification (INCDIV) and profitability (ROA/ROE) had a favorable and statistically significant association. Kenyan banks also consistently demonstrated stability and profitability. However, it was not statistically significant how diversification affected

bank profits during the COVID-19 epidemic. The idea that diversification improved stability was backed up by the fact that diversification has a favorable association with distance-to-default and an adverse connection with the standard deviation of ROA/ROE. Diversification and Covid did not statistically interact in a significant way. Control variables exhibited the anticipated patterns, with large banks being more stable and profitable than small banks. The study also revealed that better-capitalized banks may be more successful and reliable since greater equity ratios are linked to improved profitability and stability metrics. Deposits and ROA/ROE and ZSCORE demonstrated a positive association, indicating that bigger client deposits boost stability and profitability. According to this study, profitability and noninterest income exhibited a positive association, but had an adverse correlation with risk.

Obaro et al (2022) examined how diversity affects the performance of publicly traded banks. This study's main emphasis was on the performance of the Nigerian banking sector over 22 years (1999-2020), using time series data from audited reports of the banks under investigation. The research's dependent variable was bank performance as assessed by ROE, whereas the independent variables included asset, deposit, investment, and product diversification. The research outcomes suggested that asset diversification had a substantial direct impact on bank performance. Additionally, investment diversification has a positive, statistically significant influence on aggregate ROE despite having a favorable, statistically insignificant impact on product diversification. Consequently, it is concluded that diversity is essential to the performance of Nigerian banks. Therefore, Nigerian banks should foster a strong belief in asset diversification, develop marketable tactics to encourage its application and choose which assets to mix to form the most advantageous portfolio. However, deposit diversification substantially impacted bank performance. The study established that greater focus should be placed on investment diversification by bank management. The study investigated quoted banks, leaving a gap in understanding non-quoted banks.

Quyen *et al.* (2021) explored income diversification and its link to financial performance using Vietnamese evidence. The financial crisis, ownership structure, and bank size were investigated as moderating factors. The study employed financial information from 29 commercial banks in Vietnam from 2005 to 2018. The GMM regression method was used in the study. Statistical proof of the direct impact of banks' income diversification on their financial success was not found in the data. However, when taking into account classification variables such as bank size and proprietorship type, the results demonstrate that large banks and state-owned banks could benefit from diversification methods to increase their profitability. Additionally, the research showed that revenue diversification significantly improves banks' financial performance during times of crisis. The study used commercial banks in Vietnam, operational between 2015 and 2018, leaving a gap in understanding the topic of study in other time periods and regions.

Hoang et al. (2020) researched income diversification and financial health and liquidation in commercial banks using evidence from Vietnam. The research ascertained the effects of income diversification on the production of bank liquidity and financial health between 2007 and 2017. Data were gathered from 21 financial institutions in Vietnam. To process the data, GMM

estimations and panel OLS with fixed effects were used. The outcomes support the notion that Vietnamese commercial banks ought to continue concentrating on their conventional business lines rather than expanding into unconventional ones since doing so may have a negative impact on both liquidity generation and profitability. The results suggested that diversification has a detrimental effect on both the production of bank liquidity and bank profitability. The study limited data collection to ten years (2007-2017), leaving a gap in understanding the social phenomenon outside the timeline. Equally, the study focused more on evidence from Vietnam (Asia), leaving a gap in understanding the topic using evidence from other regions worldwide.

Luu et al. (2020) investigated the financial health of Vietnamese commercial banks under income diversification. The research aimed to examine the effects of income diversification on the monetary results of Vietnamese financial institutions from 2007 to 2017. An additional study was then given to see whether the ownership structure and bank experience affect the relationship between diversification and performance. The financial data for each bank was obtained from yearly reports. A two-step system GMM estimator and panel OLS with fixed effects were two of the modern econometric approaches that utilized to the empirical model in order to achieve the research's aims. The empirical findings demonstrated that income diversity improves banks' performance. The impact differs between various types of banks, though. In particular, the authors discovered that while diversity benefits state-owned and foreign banks, it has an unfavorable effect on other domestic non-state-owned institutions' financial health. The authors also discover that banks with greater market experience benefit more from diversity than banks with less expertise. The study focused more on commercial banks from Asia region (Vietnam), leaving a gap in understanding the topic of study using evidence from other regions including Africa, America, Middle East and Europe.

Conceptual Framework

The study was represented by the below conceptual relationship
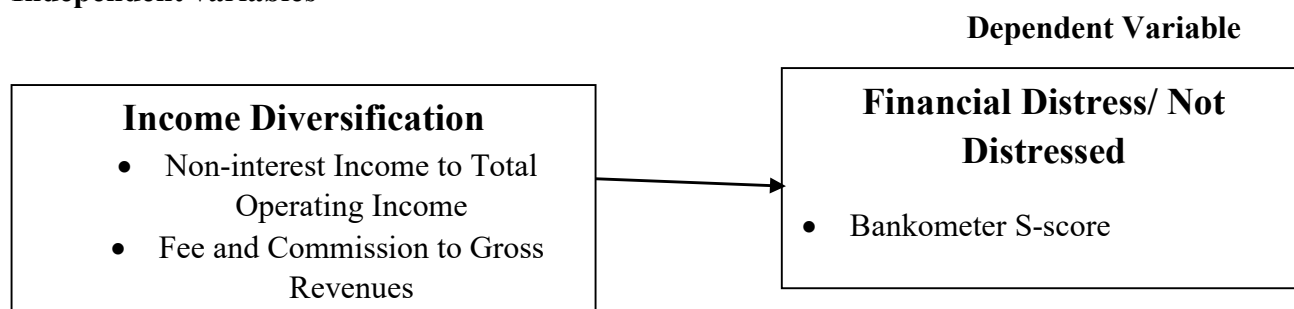
Independent variables

Dependent Variable

Figure 1: Conceptual Framework
Source: Researcher (2023)

Research Philosophy

The study utilized the positivism philosophy as it follows the deductive approach where the hypotheses are acquired from existing theories, data is collected and empirically confirmed to reject or accept a hypothesis (Weinberg, 2013). Given that this research work involved testing of interrelationships between banks specific characteristics and financial distress, and used the quantitative approach; the positivist approach is considered appropriate. The study adopted the positivism philosophy to establish causality and focus on facts relating to the link between bank-specific characteristics and financial distress among banks.

Research Design

The study utilized a causal research design. The design identifies the causal-effect of the link between dependent and independent variables (Oso & Onen, 2009). This is an appropriate design for this study because it explains the pattern between bank-specific characteristics and financial distress (Kothari, 2010). Causal studies leave room for replication, which increases internal validity, and evaluates the impact of the changes in the independent variable on the dependent variable (Samii, 2016). Moreover, this design is critical towards identification of the causes behind processes that occur within a system, for example, in the banking sector, the causal design can allow a researcher to delve into the factors associated with financial distress (Maxwell, 2012). In addition, this design allows for replication of findings and promotes internal validity.

Empirical Model

This study will employed panel logit regression analysis by considering data from all the 36 banks that were operational in the stipulated period (2011-2019). This research work adopted the Dynamic Panel Logit model that emanates from the panel logit model (Bartolucci & Nigro, 2010). The Dynamic Panel Logit model is a probabilistic statistical framework, which measures the interconnection between response variable and one or more regressor variables (Baetschmann, Staub & Winkelmann, 2015). The study adopted the Bankometer model to ascertain whether commercial banks in Kenya are financially distressed or not. The scores from the model provided a binary outcome of financial stability of banks before applying the logit model in the analysis as indicated;

$$\textbf{Bankometer S} - \textbf{Score} = \textbf{1.5 CA} + \textbf{1.2EA} + \textbf{3.5CAR} + \textbf{0.6NPL} + \textbf{0.3CI} + \textbf{0.4LA}$$

………………………………………… (**Equation 3.4**)

Where:

CAR = Capital Adequacy Ratio = Capital/Total Assets

CA = Capital Assets Ratio (Tier 1 Capital + Tier 2 Capital)/Risk Weighted Assets

EA = Equity to Assets = Equity/Total Assets

NPL = Non − performing Loans to Loans = Non − performing Loans/Total Loans

CI = Cost to Income = Operating Expenses/Operating Income

LA = Loans to Assets = Loans/Total Assets

All banks that have S-score of more than 70 are considered to be sound whereas those with a score of less than 50 are insolvent (Shar, Shah & Jamali, 2010; Sher *et .al.* 2010).

Target Population

For this study, the target population constituted of 36 licensed commercial banks that have been fully operational from 2011 to 2019 (CBK, 2019). Commercial banks in Kenya that had collapsed, placed under receivership, or operating under liquidation were not included in the target population.

Sampling Design

For the period 2011-2019, some banks have either been newly licensed or merged, while others have been placed under receivership and therefore, they were not be included in the study because of difficulty of obtaining data from them. Consequently, the research was census of active (36) Commercial Banks in Kenya Licensed as at December 31, 2019 (CBK 2019), and were operational within the time scope considered in the study.

Data Collection Instruments.

Research data was collected using a data extraction tool. The instrument contains the proxy measurements for all the constructs of the predictor and outcome variables of the study. Bank-Specific Characteristics as an independent variable was proxied by income diversification whereas financial distress was the outcome variable.

Data Collection Procedure

The researcher actively pursued and successfully acquired an authorization letter from KU Graduate School authorized the researcher to submit a letter to the NACOSTI. The permit for the study was then obtained. The study collected secondary data that was used for analysis as it is better categorized and reduces biasness as opposed to primary data. The study collected the data in a systematic manner from the year 2011 to 2019. This period was considered most appropriate as it was most recent and some banks in Kenya had experienced some form of financial distress during the period. The data collection was guided by the data collection instrument. Data from the constructs of the independent variable was acquired from websites of the CBK and individual Commercial Banks, audited financial statements and Annual supervision reports. Data on income diversification was gathered from the annual bank supervision annual reports made available by Central Bank.

Data Analysis and presentation

The research adopted secondary data containing Quantitative details from 36 commercial banks, which were extracted and summarized using Microsoft Excel. The Bankometer values were calculated using Microsoft Excel. The data was then exported to a statistical software (STATA version 15) where appropriate diagnostic, descriptive and inferential statistical tests were carried out. Bankometer S-score values were used for binary classification of commercial banks in Kenya as financially distressed or not, and subsequently application of the panel logit model to assess the hypotheses. Weights of the logit models change across time in panel data (McCormick, Raftery, Madigan, & Burd, 2012), hence the use of the panel logit model in this research work.

This research work employed descriptive and inferential statistics to analyze general trends of constructs being examined. Descriptive statistics involved the standard deviation as well as mean, whereas the inferential statistics constituted of Pearson's Product moments correlation and the panel data estimation methodology, which was undertaken using the panel logit analysis. Graphs and tables aided data presentation.

RESEARCH FINDINGS AND DISCUSSIONS

Descriptive Statistics

Income Diversification

The study objective was to determine the connection between Income Diversification and financial distress of Kenyan Commercial Banks. This section of the study covers the descriptive analysis of income diversification as one of the predictor variables of the research. Ordinarily, income diversification involves expanding a bank's range of products and services to generate additional income streams beyond traditional banking activities such as lending and deposit-taking. Through diversification of income sources, a bank can reduce its reliance on interest income, which are sensitive to changes in rates of interest and economic conditions, and mitigate the risks associated with a single source of income (Brahmana *et al.*, 2018). Income diversification can also help banks to better serve their customers' needs and enhance their competitiveness in the market (Gambacorta et al., 2014).

In low-interest-rate environment, income from interest on loans and deposits may be lower, and banks may need to rely more heavily on Non-interest Income sources. However, Income Diversification is not without risks since some non-traditional banking activities, such as investment banking, can be subject to greater market volatility and risk than traditional banking activities. This study measured income diversification using Non-interest Income to total operating income ratio and Fees & Commissions to gross revenue.

Non-Interest Incomes

As a proxy measure for Income Diversification, the non-interest incomes of commercial banks were divided over the total operating income. As captured in table 4.6 below, Non-interest Income to Total Operating Income was generally unsteady given that it fluctuated across the period with exceptions of the years 2011, 2012, and 2019 when it seemed to be higher as compared to other years. The summary of the descriptive statistics on non-interest income have been presented in table 1 below.

Table 1 Non-Interest Incomes

Year	Mean	Median	Std.	Minimum	Maximum
2011	0.3698951	0.362158	0.17518	0.03251	1
2012	0.3824347	0.3377941	0.20242	0.12944	1
2013	0.3007227	0.2852799	0.16248	0.05499	1
2014	0.3351065	0.3068646	0.20209	0.07042	1
2015	0.3181457	0.2833591	0.21449	-0.0862	1
2016	0.3301324	0.28392	0.19339	0.06944	1
2017	0.3173046	0.2997066	0.13126	0.0731	0.6303933
2018	0.2807247	0.2972229	0.29187	-1.1498	0.7508266
2019	0.3616085	0.3274003	0.20585	0.07637	1
Total	0.3328809	0.3036859	0.20151	-1.1498	1

The research outcomes contained in Table 1 above demonstrate that there are banks that kept Non-Interest Income to Total Operating Income ratio of one, supported by the maximum value of 1 for

the period between 2011 and 2019 apart from 2017 and 2018 whose scores were less than 100%. It is worth noting that irrespective of the high ratios, some banks kept Non-Interest income to Total Operating Income ratios of less than 10%, particularly for the period 2013 through 2019 as evidenced by the minimum values. The study's results in table 4.6 further exemplify that the average scores on Non-interest Income to Total Operating income exhibit an upward and downward trend with the highest mean of 0.3824347 occurring in 2012.

Generally, the results of the study indicate that banks kept high total operating income than their accrued non-interest income as espoused by individual yearly averages of less than 100%. The implication of this is that banks are heavily reliant on their interest income, which at times is vulnerable to fluctuations in interest rates. The mean of income diversification score as measured by non-interest income to total operating income for the nine-year period is 0.3328809, with a median of 0.3036859 whereas the std dev is 0.20151, suggests that the values are somewhat spread out from the mean. The observed minimum value of -1.1498 and maximum value of 1 alongside the stan dev point out to some variation in scores across the different years in this measure of income diversification. Figure 4.5 indicates the trend in non-interest income to total operating income for commercial banks in Kenya for the period 2011-2019.

The findings of the study concur with Bikker and Vervliet (2018) and Chiorazzo *et al.* (2008) whose studies established that Banks having a lower Non-interest Income in their Total Operating Income were more profitable, but more risky than banks that rely more heavily on non-interest income. Non-Interest Income is related in a positive way to bank stability, as Banks that rely more heavily on Non-Interest Income are less prone to interest rate risk and more diversified in their revenue streams. Nonetheless, banks that generate more Non-interest Income tend to have higher loan loss provisions and NPLs.

Fees and Commissions

Besides income diversification being measured in terms of Non-interest Income to Total Operating Income, it also adopted a metric measure that involved dividing fees and commissions over gross revenues. Table 2 below contains the descriptive statistics under this sub-section.

Table 2 Fees and Commissions

Year.	Mean.	Median	Std	Min.	Max.
2011	0.1412515	0.1113806	0.116	0	0.6822631
2012	0.1084769	0.09612	0.05978	0.02672	0.2336957
2013	0.1222574	0.1149035	0.06506	0.02298	0.2505976
2014	0.1204143	0.1085092	0.06642	0.01786	0.2690493
2015	0.1172167	0.1105947	0.06275	0.01909	0.2426576
2016	0.1026116	0.102745	0.05479	0.01719	0.2507137
2017	0.1212098	0.1217166	0.06574	0.0148	0.2720049
2018	0.1500378	0.1252044	0.17739	0.0143	1.091088
2019	0.1309165	0.1358555	0.07204	0.00641	0.2738053
Total	**0.1236955**	**0.1133481**	**0.0901**	**0.00**	**1.091088**

Table 2 demonstrates that the mean of fees and commissions to gross revenues stood at 0.1412515 in 2011 and then a decline in 2012. That was followed by the average ratio rising to 0.1222574 in 2013, stabilizing in 2014 by almost the same mean (0.1204143). The results further reveal that fees and commissions to gross revenues ratio declined by a small margin in 2015 followed by a

significant drop in 2016 with a lowest mean of 0.1026116 across the entire period. The overall mean of 0.1236955 is a definitive indicator of fact that banks had more gross revenues than the incomes they received from fees and commissions, a finding further accentuated by a std dev of 0.0901 and a zero minimum value. Notwithstanding higher gross revenues, evidence shows that in the year 2018 one of the commercial banks recorded more income from its fees and commissions than its gross revenues as shown by the maximum value of 1.091088. The result suggests that fees and commissions had a beneficial influence on Bank Performance, indicating that it is an vital contributor to the overall stability of banks. Figure 4.6 indicates the trend in fees and commissions to gross revenue ratio for Kenya's commercial banks from 2011 to 2019.

The study results exhibited in table 4.7 and figure 4.6 shows that despite banks keeping high gross revenues than incomes from fees and commissions, the gross revenues were slightly above 10% with 15% being the highest and 10% the lowest in 2018 and 2016 respectively. The lower gross revenue in 2016 could be assumed to be as a result of the implementation of the Interest Rate Capping Law in Sept 2016, which limited the amount of interest that banks could charge on loans. This law led to a decline in the gross revenue of Banks in Kenya, as the interest income, which was a substantial income stream for several banks, was reduced. Moreover, there was a rise in NPL in the Banking Sector in the same year. Studies by Chiorazzo et al. (2008) and Sanya & Wolfe (2011) noted that the banking system's stability is significantly improved through fees and commissions, and this often works to the advantage of larger banks.

Financial Distress of Commercial Banks.

The study's dependent variable was financial distress, which the study aimed to determine how it was predicted by bank-specific characteristics. Financial distress was measured based on Bankometer model which is one of the popular financial distress prediction models employed to ascertain the prospect of banks experiencing Financial Distress. The model takes into account various financial ratios and indicators, including capital assets, capital adequacy, loan Performing Loans to Total Loans, Cost to Income, and loans to total assets (Kick & Koetter, 2007). The model is based on the idea that a combination of these financial ratios and indicators can provide a more accurate image of a Bank's financial health than a single ratio or indicator alone (Shar *et al.*, 2010. The Bankometer model emerged as a recommendation of the IMF in the predicting Financial Distress.

The Bankometer score ranges from 0 to 100, with a score of 100 revealing that the bank is in excellent financial health, and a score of 0 indicating that the bank is in severe Financial Distress (Saputri & Krisnawati, 2020). The Bankometer model has established threshold values for different levels of financial health. For example, a score above 70 indicates a sound financial position, while a score below 50 indicates that the bank is in a critical financial position (Sher *et .al.* 2010. The Descriptive Statistics for the bankometer S-score for 2011 - 2019

Table 3: Bankometer S-score

Year	Mean	Median	Std.	Min	Max
2011	1.552814	1.237906	0.95094	0.87278	6.010591
2012	1.48738	1.289119	0.76294	0.74156	4.35039
2013	1.462337	1.308645	0.61902	0.62622	3.975226
2014	1.332657	1.189964	0.43487	0.75696	3.190357

2015	1.304913	1.23828	0.28858	0.74987	2.031098
2016	1.413924	1.326085	0.34664	0.95169	2.360314
2017	1.42159	1.306787	0.41354	0.82985	2.677203
2018	1.368518	1.225774	0.5651	-0.217	3.317904
2019	1.365515	1.248298	0.43184	0.05235	2.22043
Total	1.41261	1.277727	0.56998	-0.217	6.010591

Table 3 indicates that the scores for the bankometer model decreased sharply across the period 2011 to 2015, starting at the higher of 1.552814 and hitting the lower of 1.304913 during the period 2011 through 2015. Even though there was a slight increase in the scores for 2016 - 2017, the banking sector faced another slump in the year 2018 through 2019. The S-scores approaching zero as represented by the minimum values over all 9 years are a sharp pointer to the fact that some commercial banks experienced severe financial distress. The overall mean of 1.41261 implies is that, on average, Kenya's banking industry might have experienced severe financial distress across the period since the score is closer to zero and less than the established threshold score of greater than 70, which ordinarily signals a sound financial position.

The result of the study partly contradicts those of a study by Ouma and Kirori (2019) who reported that small and medium-sized banks were financially stable under the Bankometer model whereas, under specific categories, 2 banks were below par in relation to capital adequacy ratio while in terms of loans, all banks had poor performance. Figure 4.8 shows the financial distress trends depending on the score of the bankometer model.

Correlation Analysis

Correlation analysis was and finding presented in table 4 below.

Table 4: Correlation Matrix

Variable	Bankometer Score	Income Diversification
Bankometer Score	1.000	
Income Diversification	-0.127	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Based on table 3, the study results suggested that income diversification indicated an adverse and weak statistically significant link with the bankometer model (r=-0.127; p<0.01), a result sharply pointing to the possibility of banks falling into financial distress as they diversify their incomes..

Regression Analysis

Effect of Income diversification on Financial Distress

Table 5: Regression Coefficients

BFNF	Coef.	Std. Err.	Z	p > [z]	[95% Conf. Interval]	
BFNF L 1	0.292446	0.0554759	5.27	0.000	0.1837151	0.4011768
Income diversification	0.3504847	0.112424	3.12	0.002	0.1301377	0.5708316
_cons	-94.58886	50.60896	-1.87	0.062	-193.7806	4.602872
Wald Chi 2(5) =58.30						
Prob >Chi 2 =0.0000						

Source: Research Data (2023)

$$Y1 = p(y_i|\alpha_i, X, y_{io}) = \frac{\exp(y_i + \alpha_i + \Sigma_t y_{i,t}\, x'_{i,t}\beta + y_{i,*}\Upsilon)}{\Pi_t(1 + \exp(\alpha_i + x^i_{it}\beta + y_{i.t-1}\gamma))} = -94.5889 + 28.607\text{Sit} - 0.01433\text{DMit} +$$

$0.0000455\text{Git} + 0.3504847\text{DIVit} + \varepsilon$

Where:

p = Probability of financial distress for bank i at time t

$1 - p(X_{it})$ = Probability of not having financial distress for bank i at time t

i = observations

 t = 2011-2019 (Period)

β = the coefficient of the predictor variables;

S = Bank Size

DM= Deposit Mobilization

G = Profitability Growth

DIV = Income Diversification

ε = Error Term for the Model

Income Diversification is positively related to financial distress since its coefficient is (.3504847) and odds ratio of 1.42. However, the coefficient reports a p value lesser than 0.05(p=0.002). It is a clear indication that the existing association between the two variables is statistically significant. Hence, we deduce that there exists a substantial correlation between Income Diversification and the financial distress in Kenyan commercial banks.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The research revealed that there is a positive link between income diversification and financial distress in commercial banks. The dynamic logit regression model under Bankometer financial distress prediction model showed that as income diversification increases, the likelihood of financial distress decreases. The study, therefore, concluded that diversification can be an effective strategy for mitigating risk and enhancing stability in commercial banks.

Recommendations

Banks should consider diversifying their revenue streams by expanding into new business areas and markets as a means to mitigating risk and enhancing their stability. Diversification should be done strategically, taking into account the bank's risk appetite and capabilities. Moreover, commercial banks should ensure that they have adequate risk management systems and controls in place to effectively manage the risks associated with new business ventures.

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