

Evaluating the Financial Soundness of Small and Medium-Sized Commercial Banks in Kenya: An Application of the Bankometer Model

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Abstract

The study investigated the financial soundness of small and medium-sized commercial banks in Kenya over the four-year period, 2014 to 2017, using the bankometer model and further compared the financial health of the two bank categories. The study employed secondary data from a census of Twelve (12) medium-sized and Sixteen (16) small banks, with the financial soundness being proxied by the overall solvency score (S-Score) in order to achieve its objective. A total of six (6) different financial ratios namely, Capital to Assets ratio, Equity to Assets ratio, Capital Adequacy Ratio, Non-Performing Loans ratio, Operating Cost to Operating Income ratio and the ratio of Loans to Assets were used in the study to measure the degree of financial health of the banks. One of the key findings of the study was that both the small and medium-sized commercial banks in Kenya were financially sound during each of the four (4) years studied, with no significant difference in the financial soundness of the two bank categories. Other findings were that all the banks studied experienced poor performance in loans and operations while two banks had below the benchmark capital adequacy ratio. The findings of the study are important in that, they can be used to formulate policies and strategies for promoting improvement in the financial performance of the banking sector in particular and the business sector at large in the country.

Keywords: Bankometer model, commercial banks, financial ratios, financial soundness, solvency score

1. Introduction

1.1 Background

This study drew its justification from the fact that banks play a crucial role in the national and international economies, and hence there is need to constantly assess and measure their financial health by use of reliable bankruptcy prediction models to the benefit of all stakeholders (Charalampos-Orestis, 2017). The ability to predict and detect vulnerable banks in any country's banking system enables early warning signals to be detected. This are extremely useful if the bankruptcy of banks is to be averted or at least its effects minimized.

In the banking business, financial soundness means the ability of a bank to maintain the solvency position in order to meet its long term fixed expenses and accomplish long term expansion and growth plans (Kattel, 2015). In other words, financial soundness refers to the overall financial health of the bank, or the banking sector when all the banks are taken together. This includes the ability to meet short-term and long-term financial obligations as and when they fall due while complying with all the regulatory requirements. It may also be equated to the absence of financial distress.

According to the IMF (2000), commercial banks make up a significant part of the financial system of any country, with the other players being securities markets, pension funds, insurers, market infrastructures and central bank, as well as its regulatory and supervisory authorities. The wellbeing of an economy is interconnected with the soundness of its banking system since banks help in proper allocation and optimum utilization of financial resources in the society (Makkar & Singh, 2015).

Banks also promote economic growth by providing a framework for carrying out economic transactions and monetary policy thereby helping channel savings into investment. In essence, any problem with the banks will not only disrupt financial intermediation, but can also undermine the effectiveness of monetary policy, worsen

economic downturns, trigger capital flight and exchange rate pressures and create large fiscal costs related to rescuing troubled banks. Schinasi (2004) explains that, although financial shocks in one country can quickly spill across national borders in the modern world, a stable financial system can improve economic performance of the countries and also prevent the effects of disruptive disorders. An enduring, efficient and financially sound banking sector can provide a base for stabilization in financial system to achieve genuine earnings for a developing economy (Rahman, 2017).

Like other businesses, banks suffer from financial distress from time to time that can lead to total collapse as has happened around the world. And distressing financial conditions to a bank can be due to many factors, both internal and external. For instance, the collapse of the New York based Bank of the United States in December 1931 involving a loss of more than \$200 million in deposits was the single largest bank failure in the history of the United States (Bordo & Lane, 2012). The 2007-2009 financial crisis in the United States involving the collapse of many banks and financial institutions severely affected the US economy, including unparalleled unemployment, a massive decline in gross domestic product (GDP) and a prolonged crisis in mortgage seizures (Schoen., 2016). According to Larnyoh (2018), seven banks collapsed in Ghana within a span of two years 2015 to 2017, mainly because of financial distress. Kenya has similarly had a history of bank failures, with about thirty-seven banks failing between 1986 to 1998 (Kithinji & Waweru, 2007; Ngugi, 2001). In 2015, three Kenyan banks were placed under statutory management due to financial distress (Gathaiya, 2017).

For the state, investors, creditors, depositors and other stakeholders, the ability to predict accurately and detect vulnerable banks in a country's banking system is crucial. This ability is not only crucially needed in times of financial crisis and economic instability but it is also important in stable economic conditions (Bolat, 2017).

Kenyan commercial banks are classified into three peer groups using a weighted composite index: net assets, customer deposits, capital and reserves, deposit accounts and loan accounts. A bank with a weighted composite index of 5 percent and above is classified as a large bank. A medium bank has a weighted composite index of between 1 percent and 5 percent, while a small bank has a weighted composite index of less than 1 percent (CBK, 2018). The target population of the study were the thirty-four commercial banks which were in operation in Kenya throughout the study period of 2014 to 2017, made up of six large banks, twelve medium-sized banks and sixteen small banks.

The study was anchored on the Positivism theory in which the role of the researcher is limited to data collection and interpretation in an objective way and research findings are usually observable and quantifiable (Ramanathan, 2008).

1.2 Objectives

The overall objective of the study was to investigate the financial soundness of the small and medium-sized commercial banks in Kenya using Bankometer model (S-scores) while the specific objectives included the following:

- i. To examine the financial soundness of all the small and medium-sized commercial banks in Kenya over the four-year period, 2014 to 2017, using the bankometer model.
- ii. To make comparison between the financial soundness of small banks and medium-sized banks in Kenya over the four-year period, 2014 to 2017, using the bankometer model.

1.3 Literature Review

Taking the positivist approach, the study sought to establish the financial soundness of the small and medium-sized commercial banks in Kenya as at the end of the four financial years studied but without delving into the question of why and how the observations made came about. The positivism theory, on which the study was anchored views knowledge as coming from human experience (Hume, 1772) and that the world is comprised of discrete, observable elements and events that interact in an observable, determined and regular manner. The role of the researcher is therefore limited to data collection and interpretation in an objective way and research findings are usually observable and quantifiable (Ramanathan, 2008).

The study was further guided by the stakeholders' theory and the agency theory. The stakeholders' theory provides that the business must take into account not only the interest of its owners, but also those of other stakeholders and defines a stakeholder as any person who holds a stake in the activities of an organization and is therefore capable of affecting or being affected by the achievement of the organization's objectives (Freeman & Reed, 1983). Agency theory defines the relationship between the owners of the business (principal) and the managers of the business (agents) and prescribes actions aimed at protecting the principal's investment from the agent's potentially harmful behaviors (Jensen & Meckling, 1976).

An empirical review of related literature delved into studies involving the predictive ability of three main models of financial soundness assessment, the Z-Scores, The CAMELS model and the Bankometer model and their application to studies of the financial soundness of Islamic and joint venture banks.

The CAMELS Rating Framework is a system of rating for on-site examinations of banking institutions (Barr et al., 2002). CAMELS is recognized to be an effective internal supervisory tool for evaluating the soundness of financial firms especially banks. Under this system, each banking institution which is subject to on - site review, is assessed on the basis of six critical dimensions related to its operations and performance, referred to as component factors including: Capital Adequacy, Asset Quality, Management Efficiency, Earnings Quality, Liquidity and Sensitivity to market risk. These component factors are used to reflect the operating performance, financial performance and regulatory compliance of the banking institutions and each factor in the component is rated on a scale from 1 (best) to 5 (worst). A composite rating is assigned, which is considered the main indicator of the current financial condition of a bank.

The CAMELS components completely reflect the safety and soundness of banks (Barr et al., 2002). In general, the results of the study using CAMELS to assess the financial condition and health of banks conclude that CAMELS ratios can accurately show the condition of troubled and untroubled banks, but they cannot be used to predict the likelihood of a bank in financial distress or even bankruptcy (Erari, Salim, Idrus, & Djumahir, 2013). Nurhidayah (2003) used the CAMELS ratios and the Altman Z-Score model to predict the possibility of financial distress of listed companies and banks, and concluded that some adjustments in the banking industry are still necessary, since the use of the Z-Score analysis model and CAMEL together could not produce the same conclusion, since the results tend to be different or even contradictory.

Budiman, Herwany, and Kristanti (2017) studied Islamic banks in Indonesia to assess the degree of financial distress of the banks and the differences between listed and non-listed banks for the period 2011-2015 using the Bankometer Model. The study used secondary data from the financial statements of the banks and purposive sampling design. The sample consisted of 11 Islamic Banks in Indonesia. The study found that all the Islamic banks studied were financially very healthy throughout the period of the study. Using independent t-test, the study showed that there were significant differences between non-performing loans from listed and non-listed Islamic banks. While the study was successful in application of the Bankometer Model, its scope was limited to Islamic banks in Indonesia.

While there are various methods for measuring the financial health of a bank, the Bankometer Model is recommended by the IMF (2000) for its simplicity in procedure, minimum number of parameters, and corresponding results which are very accurate (Kattel, 2015). The Model uses ratios from the CAMEL model and CSLA (*Credit Leona's Securities Asia*) stress test model with slight changes in their limits and percentages (Shar et al., 2010). Makkar and Singh (2015) assessed the level of solvency in commercial banks in India in the period of 2006/2007-2010/2011 by using Bankometer Model and concluded that the Model can accurately be used in assessing the health of banks in India. For the period 2007-2012, Kattel (2015) used the Model to assess the financial solvency of joint venture and private sector banks in Nepal. The study found that both private and joint venture banks were in a sound financial position, although banks in the private sector were financially sound compared to banks in joint ventures. The study concluded that the Bankometer Model would help banks internal management to mitigate the risk of insolvency under proper operational control and supervision. Rahman (2017) applied the Bankometer Model to assess the financial soundness of twenty-four purposefully selected private commercial banks in Bangladesh during the period 2010 to 2015 and concluded that all the banks at the time were in sound financial health. There was no attempt, however, in the study to determine whether or not there could have been a different result if the banks had been public, rather than private.

1.4 Conceptual Framework

Figure 1 presents the conceptual framework and interrelationships among the variables used in the study. The dependent variable is financial (solvency) soundness of the banks, measured by the S-Score while the independent variables are the six Bankometer Model financial ratios computed from the figures extracted from the financial statements of the banks.

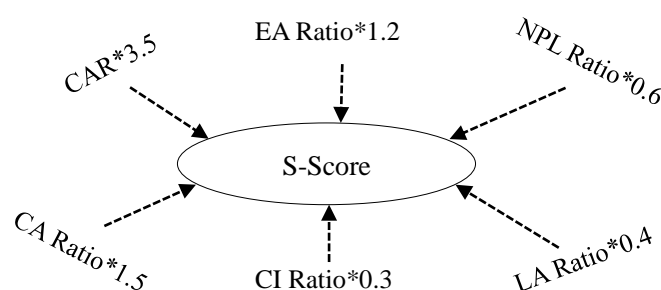


Figure 1. Theoretical framework of the financial soundness scores based on the Bankometer model

Table 1. Definition and operationalization of variables

Variable	Ratio of	Results	Criteria
S-Score	Composite	$S = 1.5CA + 1.2EA + 3.5CAR + 0.6NPL + 0.3CI + 0.4LA$	(≥70%)
Variable Ratios			
CA	Capital to Asset Ratio	This measures the amount of assets financed by equity and long - term debt, the higher the ratio, which means that the bank is safer because the assets are financed by long - term funds.	(≥4%)
EA	Equity to Asset Ratio	This indicates to what extent the bank's assets are financed by equity capital. The higher this ratio, the more secure the financial position of the bank in the long run because more assets are financed by the bank's own capital as opposed to external funding	(≥2%)
CAR	Capital Adequacy Ratio	This is the regulatory capital to risk-weighted assets ratio. The total regulatory capital is calculated as the numerator and the risk - weighted assets as the denominator. It measures the capital adequacy of deposit holders, which ultimately determines the degree of strength of financial institutions in order to withstand shocks in their balance sheets (IMF, 2000).	(≥8%)
NPL	Non-Performing Loan Ratio	This indicates what proportion of the bank's loans are classified as non-performing loans. These loans result into unremitted interest for long periods of time, say up 90 days. A high ratio indicates the higher non-productive loans issued by the bank.	(≤15%)
CI	Cost to Income Ratio	This is the ratio of operating expenses (excluding non-cash expenses) to operating income.	(≤40%)
LA	Loan to Asset Ratio	Measures the amount of long-term credit assets invested. The higher ratio means more loans that have a positive impact on bank earnings, but also have a negative impact on bank liquidity, while the lower ratio means fewer loans and therefore has a negative impact on bank earnings while having a good impact on the bank's liquidity	(≤65%)

Table 1 presents the definition and operationalization of the variables used in the study. The proof of financial solvency is the composite score, the S-Score, which portrays the level of financial soundness of each bank studied. The S-scores, were used to appropriately classify the banks studied.

The study employed the Bankometer Model to analyze the financial soundness of the banks and the t-test statistic to test the null hypothesis that there was no difference between the mean S-Scores of the small commercial banks and the mean S-Scores of the medium-sized commercial banks. The functional form and the test statistic are written as follows: -

1.5 The Bankometer Model

$$S = 1.5CA + 1.2EA + 3.5CAR + 0.6NPL + 0.3CI + 0.4LA$$

Where

“S” = Stands for Solvency, CA = Capital to Asset Ratio, EA = Equity to Assets Ratio, CAR = Capital Adequacy Ratio, NPL = Non-Performing Loans Ratio, CI = Costs to Income Ratio and LA = Loans to Assets Ratio.

The classification criteria are as follows:

$S\text{-Score} > 70$ Bank has healthy financial conditions with no financial distress.

$S\text{-Score} < 70$ Banks are in the grey area and are classified as banks with financial problems. These banks have an equal probability of bankrupt and their survival depends heavily on the decisions of management.

$S\text{-Score} < 50$ Bank is classified as having heavy financial problems and a high risk of bankruptcy.

2. Methodology

The study adopted the cross-sectional research design which involves studying subjects that differ on one key characteristic at one specific point in time. The target population was the 34 banks that were in operation throughout the study period, made up of 6 large banks, 12 medium-sized banks and 16 small banks. The study employed purposive sampling design in order to identify the two cohorts of the banks for study, all the sixteen small and all the twelve medium-sized commercial banks during the period 2014 to 2017. Relevant data was extracted from the audited published financial statements of the banks and the model parameters computed using MS-Excel.

3. Results

3.1 Financial Soundness Scores (S-Scores)

Table 2. Mean S-scores for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	159%	159%	177%	171%
Small Banks	183%	167%	193%	194%

Table 2 presents the results for the solvency scores (S-Scores) for the small and medium-sized commercial banks in Kenya over the period 2014-2017. The table 2 shows that all the banks obtained a solvency score of more than 70% for each year studied and further indicates that the mean Solvency Score for each of the two categories of banks was also above the minimum provided for by the Bankometer Model. This implies that all the banks studied were found to be financially sound. The value of the t-statistic for the difference between the two S-Score means for the small and medium-sized commercial banks, at 5% level of significance, was found to be not statistically significant.

3.2 Capital to Assets (CA) Ratio

Table 3. Mean CA ratios for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	17%	14%	16%	15%
Small Banks	15%	15%	19%	18%

Presented in Table 3 are the results of average CA ratios for the small and medium-sized commercial banks in Kenya over the period 2014-2017. The results show that all the banks studied obtained CA ratios of 4% and above, suggesting that each bank had an adequate level of CA ratio based on the bankometer model. The value of the t-statistic for the difference between the two sample mean CA ratios for the small and medium-sized commercial banks, at 5% level of significance level, indicated that the difference between the mean CA ratios of the two categories of banks was not statistically significant. This difference shown in table 3 indicates that the small banks had, on average, a higher CA ratio than the medium-sized ones for all the years studied except the year 2014.

3.3 Equity (Shareholders' Funds) to Total Assets (EA) Ratio

Table 4. Mean EA ratios for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	16%	15%	17%	16%
Small Banks	17%	17%	20%	20%

Table 4 presents the mean EA ratios for the small and medium-sized commercial banks in Kenya over the period 2014-2017. The table shows that the mean EA ratio for small banks was higher than the mean EA ratio for the medium-sized ones in all the years studied. The t-statistic value for the difference between the two sample mean EA ratios for the small and medium-sized commercial banks, at 5% level of significance, was found to be not statistically significant.

3.4 Capital Adequacy Ratio (CAR)

Table 5. Mean CARs for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	20%	20%	22%	22%
Small Banks	26%	20%	24%	24%

Table 5 presents the mean CAR for small and medium-sized commercial banks in comparison to the benchmark provided by the bankometer model. It indicates that, on average, both categories of banks had CAR above the benchmark of the bankometer model, with the small banks having a higher mean CAR than the medium-sized ones. The t-statistic value for the difference between the two sample mean CAR ratios for the small and medium-sized commercial banks, at 5% level of significance, was found to be not statistically significant. On individual analysis, one small bank and one medium-sized bank were found to have a CAR of 5% in the year 2017, falling short of the model recommended ratio of greater than or equal to 8%.

3.5 Non-performing Loans (NPL) Ratio

Table 6. Mean NPL ratios for small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	5%	8%	12%	16%
Small Banks	11%	12%	14%	17%

The results of the NPL ratios for the small and medium-sized commercial banks in Kenya over the period 2014-2017 are presented in Table 6. The table shows that the on average, small banks had higher NPL ratios than the medium-sized ones and that in the year 2017, both categories of banks had mean NPL ratio above the acceptable level provided by the bankometer model of 15%. The t-statistic value for the difference between the two sample mean NPL ratios for the small and medium-sized commercial banks, at 5% level of significance, was found to be not statistically significant. Analysis of individual bank NPL ratios showed that four medium-sized banks and eight small banks had NPL ratios higher than the acceptable 15% for at least one of the periods evaluated.

3.6 Costs to Income (CI) Ratio

Table 7. Average CI ratios for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	65%	73%	77%	66%
Small Banks	74%	74%	75%	85%

Table 7 presents the results of CI ratios for the small and medium-sized commercial banks in Kenya over the period 2014-2017. The table shows that the mean CI ratio for both categories of banks were outside the acceptable level of $\leq 40\%$ based on the bankometer model in all the years studied and that the small banks had a higher mean CI ratio than the medium-sized ones for all the years except 2016. The value of the t-statistic for the difference between the two sample mean CI ratios for the small and medium-sized commercial banks, at 5% level of significance, was found to be not statistically significant.

3.7 Loans to Assets (LA) Ratio

Table 8. Average LA ratios for the small and medium-sized commercial banks in Kenya

Year	2014	2015	2016	2017
Medium-sized Banks	56%	58%	57%	54%
Small Banks	56%	62%	64%	64%

The results of the LA ratios for the small and medium-sized commercial banks in Kenya over the period 2014-2017 are presented in table 8. The results suggest that the mean LA ratios for both categories of banks studied was less than 65%. This suggests that both categories of banks had an acceptable level of mean LA ratio based on the bankometer model. The small banks had a higher average LA ratios during the entire study period than the medium-sized ones. The t-statistic value for the difference between the two sample mean EA ratios for the small and medium-sized commercial banks was found to be not statistically significant at 5% level of significance.

4. Discussion

All the small and medium-sized commercial in Kenya banks studied were found to be in sound financial health, given that their S-Scores were all above 70%. However, specific variables of the model were found to be out of acceptable range thereby calling for specific interventions.

Since the CA measures how much assets are financed by a combination of both equity and long term debt, the greater ratio exhibited by the medium-sized banks means that these banks are more secure. This is because a greater proportion of their assets are financed by long-term funds than those of the small banks.

The higher EA ratios shown by the small banks over the medium-sized ones implies that assets of the small banks are not only more financed by long-term funds than medium-sized banks, those long term funds are more of equity than debt, making the medium sized banks even more assets secure.

The one medium-sized bank and the one small bank that was found to have below the threshold CAR are at risk of being unable meet their financial obligations as they fall due and hence has higher risk of falling into financial distress.

The NPL ratio indicates that a significantly high number of Kenyan small and medium-sized commercial banks had a higher than acceptable level of non-performing loans. Since these represent bank loans that are subject to late repayment or are unlikely to be repaid by the borrowers, there is very high risk of these falling into financial problems if this is not dealt with.

The high CI ratios observed implies that the profitability of these banks is low, with some actually making losses for some of the years studied.

Since the LA ratio measures the amount of credit distribution compared to the bank's total assets with a higher LA ratio causing lower bank liquidity levels, on average, the smaller banks were less liquid than the medium-sized ones due higher LA ratios.

The study observed that two banks did not meet the model requirements in a number of the variables, casting doubts on their future financial health. These are the National bank of Kenya Ltd, a medium sized bank and the Consolidated bank of Kenya Ltd, a small bank. Both banks had the lowest S-Scores in their respective categories and did not meet the bankometer model requirements for LA ratios, CI ratios, NPL ratios and CAR.

The study recommends that equity holders should inject more capital into the two banks with below benchmark Capital Adequacy Ratio. It was noted that these two banks were both owned by the government of Kenya hence the government is advised to invest more in these two banks to enhance their capita levels

A further recommendation is that there is need to make appropriate intervention to reverse the observed poor Non-Performing loans ratios and the CI Ratios for majority of the small and medium-sized banks. It may be necessary for further studies to be conducted on the causes of non-performing loans and the high Cost to Income ratios and hence low profitability. This may help alleviate the risk of falling into loss making territory as was already observed with some of the banks studied.

Since the study results are based on static and time bound results, it does not provide any explanation of the underlying factors that brought about the results observed. Further research will help in explaining the reasons behind some of the ratios that were observed to be below the recommended benchmark for example the high non-performing loans ratio, the high costs to income ratio and the poor capital adequacy ratios observed. There is need for further research to determine the underlying factors that are likely to affect the financial soundness of the commercial banks and how these can be mitigated against.

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