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PREDICTING BANKRUPTCY OF COMPANIES: EVIDENCE FROM GHANAIAN LISTED BANKS

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Abstract

Purpose: The study assessed the performances of Ghanaian banks in terms of their liquidity, solvency and profitability by applying financial ratios on the published audited financial statements and further predicted the bankruptcy of the selected banks with the application of Altman Z-model for selected banks in Ghana Stock Exchange.

Methodology: Data gathered was analyzed using liquidity, leverage and profitability ratios as well as Altman Z-score. Current ratio and quick ratio were used to assess the liquidity of the banks. Additionally, debt to asset ratio and debt to equity ratio were utilized to find out the solvency of the banks. Whereas, return on assets and return on equity were employed to examine the profitability of the banks. Finally, working capital to assets, retained earnings to assets, earnings before tax to assets and market value of equity to liabilities were the ratios employed to determine the Z-scores.

Results: Findings revealed that the liquid positions of the banks were below expectations. As far as the solvency positions of the banks were concerned, findings revealed the sector is highly leveraged. Analysis of the profitability position showed that the banks are fairly profitable as their profit averages were above that of the industry. Again, the Altman Z-score model revealed that all the selected banks except one were in corporate distress and far below the standard ratio to be in safe zone and thus, were likely to declare bankrupt.

Keywords: *Bankruptcy, financial ratios, Altman Z-score*

1.1 INTRODUCTION

The Ghanaian banking sector is playing a number of roles. Some of these include; trade facilitation, offering letters of credit for importers, as well as serving as channels for receiving payments on behalf of exporters, and continue to serve as sources of finance for businesses both small and large (Bourke, 1989). A statement by the former Governor of the Bank of Ghana (BOG, 2012) revealed that the banking sector has gone beyond national borders. This statement by the former Governor further sheds light on the impending competition in the industry and as such its effect on banks efficiency and profitability since the share of the industry will no more be concentrated amongst the few banks but rather be divided amongst the lot.

Over the immediate past few years, Ghanaian bank industry has had its portion of crisis culminating into a loss of about 2,700 jobs (Nyalatorgbi, 2019). Although, Ghana banking sector has made some enormous improvement since 2001 mainly following what many pundits say has been the prudence of the central bank which has initiated many key decisions in line with global trends. Since 2003, Universal Banking has replaced a banking industry which was hitherto made up of a three-pillar banking model- development, merchant and commercial banking. Changes mainly captured in the Ghana Banking Act 2004 which implemented a universal banking concept, saw an inflow of banks into the country mainly from Nigeria, Liberia and India. This occurrence has introduced a healthy rivalry among banks, which experts have described as sound for the future development of the industry (Graphic Business, 2009).

The inflow saw the number of licensed banks in Ghana increasing to thirty-four (34) in 2017. This number of licensed banks though has dropped to twenty-three (23) as at February 2019. This was after the licenses of two insolvent banks, namely UT and Capital banks were revoked in July 2017 due to their severe capital impairment. Bank of Baroda voluntarily wound up, whilst GN Bank was downgraded to a savings and loans after it was unable to meet the minimum capital requirement set by the bank of Ghana. The Ghanaian Banking Sector has faced a number of crises in recent past.

Dr. Addison (Governor of the Bank of Ghana), attributed the crisis to poor banking practices, weak supervision and indifference to the enforcement of regulatory measures by the immediate past administration of the Central Bank. The Banks and Special Deposit-Taking institutions Acts 2016 (Act 930), Section 62 of Ghana has a legal lending limit which requires that beyond a certain threshold of unimpaired capital and surplus accounts, the bank is not permitted to grant a loan to a single customer. This requirement is meant to reduce the risk exposure of a single customer to default. It further emphasizes that, depending on whether such a loan is secured or unsecured, it must not exceed 10 percent of net owned funds of the

bank in the case of an unsecured loan and not more than 25 percent if a loan is collateralized (see Abor et al, 2019).

Despite reports of huge profits accruing to Ghanaian banks over the years, there is a general perception that the sector is inefficient in terms of service provision and cost management (Bawumia et al., 2005; Sarpong et al. (2013)). The efficiency of the banking industry is imperative to monetary policy implementation and economic stability. The efficiency of a banking industry is measured by the average efficiency of the individual banks in the industry. The efficiency of the individual banks in the country reflects the efficiency of the whole banking industry. An efficient financial system must be capable of measuring, analyzing and hedging or otherwise limit all types of risk faced resulting from transactions undertaken.

A study undertaken by Bawumia et al. (2005) and Sarpong et al. (2013), indicated that there are inefficiencies in the Ghanaian banking industry in terms of credit risk reduction, service provision and cost management. Demirguc-Kunt & Detragiache, (1998) per their study showed that, bankruptcy or crisis in banks is predictable if those banks are inefficient in operations, ranging from inadequate liquidity, excessive overhead cost, increased cost of funding due to undercapitalization and unhealthy loan portfolios arising from increased exposure to credit risk. Therefore, the use of accounting ratios will certainly help give a future indication on their financial health.

In recent times through financial and banking sector cleanout by the central bank of Ghana, over five banks and several microfinances got collapsed (*graphic.com 2018)*. The economy of Ghana witnessed the closure of some key notable banks which were subsequently merged and taken over by the state and named Consolidated Bank of Ghana. These banks included Unibank limited, The Royal Bank Limited, Beige Bank Limited, Construction Bank Limited and Sovereign Bank. The Bank of Ghana in 2018 reveal that, these five institutions were in distress yet their financial reports showed a healthy financial information contrary to their actual state and that, they were not in compliance with the Bank of Ghana regulations. Therefore, this study seeks to fill this gap by assessing the financial performance of listed banks in Ghana which will result in the prediction of bankruptcy. The objective of this study therefore is to use financial ratios to predict financial distress, corporate default or bankruptcy commercial banks in Ghana. This study will therefore assess the performance of the banks using accounting ratios and predict the bankruptcy of the banks using accounting ratios and Altman Z-score model.

2.1 LITERATURE REVIEW

2.1.1 Concept of Bankruptcy and Financial Ratios

According to Amisom-Yaansah (2016), eminent failure or bankruptcy of businesses and its prediction is of great importance to various stakeholders including investors, suppliers,

creditors and shareholders. A business could fail as a result of current obligations even though its asset is more than its total liabilities or bankruptcy if a firm's total liability exceeds its total assets. Whitaker (1999) found that firms become bankrupt as a result of economic distress stemming from a fall in industry operating income and poor management, arising out of incessant losses over a reason given above, but differ from the fact that, the fall in operating income is as a result of poor management. Altman (2006) assigned managerial incompetence as the most pervasive reason for corporate failures. This seems to agree with the view of Whitaker that management incompetence is a main reason for company failure. In recent times many business failures have been attributed to poor corporate governance. Altman (1968) argued that corporate failure happens in areas where the company management has detected some signs such as the failure to fulfill some obligations but failed to recognize it until it all accumulates and bankruptcy is imminent. Ross et al. (2013) stated that a company is facing bankruptcy when its assets values are equal that of the debts. When this happens, the equity value is equal to zero, and the control of the company is shifted from stockholder bondholder. In the financial sector, one useful way of detecting bankruptcy is by using financial ratios.

Subramanyam and Wild (2013) stated that financial analysis using financial ratios is a very useful tool that significantly assists business decision making and distinguishing the weak areas in the company from the strong. Husein and Pambekti (2014) found that financial ratios obtained from the company's financial statement are an efficient way to analyze the soundness of the company and can be used to anticipate future financial difficulties. Almilia (2006) supported the idea that financial ratios from the income statement, balance sheet and cash flow statement have a significant influence in predicting financial distress. However, the largely accepted model in which these ratios are used is the Altman Z-Score.

Researchers such as Azadinamin (2013), Lagkas and Papadopoulos (2014), VenkataRamana, et al. (2012), Maina and Sakwa (2017), Mahama (2015), AlKhatib and AlBzour (2011), Kpodoh (2009), Sopiyah Arini and Triyonowati (2013), Sheilly et al and Chaitanya (2005) all used Altman Z-score in predicting the bankrptucy of various companies.

The causes of bankruptcy has been identified by researchers to include short-term financial problem (Hanafi and Halim, 2005), Economic Factors, Social Factors, Technology and State Factors (Jauch and Glueck in Adnan, 2000:139), Customer Factors, Creditors Factors, Competition Factors (Jauch and Glueck in Adnan, 2000:139) and internal factors in companies (Harnanto in Adnan, 2000:140).

Apart from these factors, there are certain indicators of bankruptcy. Foster (1986) gave some of the indicators as follows; analysis of cash flow at the current period and the future one, analysis of the company's strategy has been considering the potential competitors, relative cost structure, industrial expansion planning, capability of the company to continue cost

increasing, quality of the management, analysis of financial statement of the company and comparison with other company and external information refers to shares return and bonds evaluation.

2.1.2 The concept of Ratio Analysis

Wild (2005) defines ratio analysis as an expression of a mathematical relationship between quantities expressed as percent (e.g. 25%) (2.5 times) or proportion (e.g. 2.5 to 1). He further contends that the significance of ratios can only be appreciated when referred to on occasionally as unequal relations.

Financial ratio analysis is the calculation and comparison of ratios which are derived from the information in a company's financial statements (Arkan, 2016). The level and historical trends of these ratios give indications of a company's financial condition, its operations, management efficiencies, prospects and attractiveness on an investment avenue (Arkan, 2016). Financial ratio is calculated from one or more pieces of information from a company's financial statements. Financial ratio includes the following profitability ratio, liquidity ratio and leverage ratios.

2.1.3 The Concept of Altman's Z-Score Analysis

Z-Score analysis is a tool/method using to predict the company's condition whether it is good or bad and to indicate the performance of the company reflecting to the prospect of the company in the future. Altman has applied 5 financial ratios to predict the company's bankruptcy. The Z-score model was introduced as a way of predicting the probability that a company would collapse in the next two years. The model proved to be an accurate method for predicting bankruptcy on several occasions. According to studies, the model showed an accuracy of 72% in predicting bankruptcy two years before it occurred, and it returned a false positive of 6%. The false-positive level was lower compared to the 15% to 20% false-positive returned when the model was used to predict bankruptcy one year before it occurred.

When creating the Z-score model, Altman (1968) used a weighting system alongside other ratios that predicted the chances of a company going bankrupt. In total, Altman created three different Z-scores for different types of businesses. The original model was released in 1968, and it was specifically designed for public manufacturing companies with assets in excess of $1 million. The original model excluded private companies and non-manufacturing companies with assets less than $1 million. Later in 1983, Altman developed two other models for use with smaller private manufacturing companies. Model A Z-score was developed specifically for private manufacturing companies, while Model B was created for non-publicly traded companies. The 1983 Z-score models comprised varied weighting, predictability scoring systems, and variables.

The financial ratios used in Z-score model for non-manufacturing firms are working capital/total assets, retained earnings/total assets, earnings before interest and tax/total Assets, market value of equity/total liabilities and sales/total Assets

The criteria to predict the company's bankruptcy refers to the company having Z-score > 2.99 is classified as a healthy company, but a company having Z-score < 1.81 is classified potentially bankrupt. Furthermore, companies having the score between 1.81 to 2.99 are classified critically bankrupt. (Hanafi and Halim, 2005)

The use of Altman Z-score in predicting bankruptcy has been done in difference areas of study. However, using this model and applying it to financial sector especially in Ghana has not been largely explored. This research therefore sought to fill this gap in literature.

3.1 METHODOLOGY

In order in carry out prediction of solvency, this study used financial ratios analysis which was calculated from audited financial statements and Altman Z-Score. Financial Ratios analysis was used to calculate and compare ratios which are derived from the information in the banks' financial statements. The level and historical trends of these ratios give indications of the banks' financial condition, their operations, management efficiencies, prospects and attractiveness on an investment avenue. Results from the banks in terms of ratio revealed their profitability, leverage and liquidity over the 5-year period which assessed their performance and future performance based on that trend. Altman (1968) Z-Score model was used to predict the chances of the banks going bankrupt in the near future. The Model was developed by American finance Professor, Edward Altman in 1968 as a measure of the financial stability of companies.

Altman's Z-score model is considered an effective method of predicting the state of financial distress of any organization by using multiple balance sheet values and corporate income statements. Altman's idea of developing a formula for predicting bankruptcy started at the time of the Great Depression when businesses experienced a sharp rise in incidences of default.

3.1.1 Population and Sampling

Ghanaian private and state-owned banks listed on the Ghana Stock Exchange (GSE) are the target for the study. The reason is that banks are seen as one of the important sectors in the economy. There were 32 banks listed on the GSE. The researcher however, considered 3 state owned banks and 2 other private banks totaling 5 selected banks in Ghana. The banks include; Ghana commercial bank Ghana Limited, National Investment Bank Ghana Limited, Agricultural Development Bank Ghana Limited and privately own banks which are Cal Bank Ghana Limited and Fidelity Bank Ghana Limited. The availability and accessibility to data of banks were also key to the sampling of the banks and thus, the selected banks gave enough data to achieve the objectives of the study.

3.1.2 Data

Data used in this study was secondary in nature. The audited annual financial statements of the selected banks from 2015 to 2019 as the five-year period was enough for any trend regarding the prediction of possible financial distress of the selected banks to be established. The following were calculated from financial statement of these selected banks: total assets, total liabilities, shareholders' equity, retained earnings, earnings before tax, working capital and stated Capital

Table 1: Ghana Commercial Bank - Annual financial Reports (Ghc'000)

Details	2019	2018	2017	2016	2015
Total Assets	10,635,051	9,558,151	6,049,604	4,641,166	4,232,819
Total Liabilities	9,309,634	8,445,001	5,034,491	3,824,549	3,572,923
Shareholders' Equity	1,325,417	1,113,150	1,015,113	816,617	659,896
Retained Earnings	323,132	212,715	299,007	244,735	270,057
Earnings before Tax	446,382	308,894	446,782	350,276	382,436
Working Capital	1,429,375	1,149,021	824,051	860,024	799,707
Stated Capital	500,000	100,000	100,000	100,000	100,000

Table 2: Fidelity Bank Ghana Limited - Annual financial Reports (Ghc'000)

Details	2019	2018	2017	2016	2015
Total Assets	7,015,823	5,378,048	4,173,602	4,113,812	3,020,283

Total Liabilities	6,324,213	4,843,839	3,680,255	3,609,869	2,635,457
Shareholders' Equity	691,605	534,209	493,347	503,943	384,826
Retained Earnings	163,717	90,434	14,711	147,734	81,912
Earnings before Tax	242,090	135,359	18,576	205,799	112,477
Working Capital	686,756	607,638	504,164	578,633	558,313
Stated Capital	404,486	264,486	264,486	264,486	264,486

Table 3: Agricultural Development Bank - Annual financial Reports (Ghc'000)

Details	2019	2018	2017	2016	2015
Total Assets	3,597,395	3,545,143	3,035,493	2,134,147	2,156,740
Total Liabilities	2,957,684	3,066,130	2,580,715	1,801,254	1,812,925
Shareholders' Equity	639,711	479,013	454,778	332,893	343,815
Retained Earnings	5,908	26,510	(70,026)	(78,975)	47,865
Earnings before Tax	34,057	47,339	(105,714)	(100,198)	34,670
Working Capital	609,496	404,604	372,146	262,383	369,293

Stated Capital	275,100	275,100	275,100	27,000	75,000

Table 4: NIB - Annual financial Reports (Ghc'000)

Details	2019	2018	2017	2016	2015
Total Assets	640,620	260,294	-	2,654,693	2,319,574
Total Liabilities	210,632	123,310	-	2,111,513	1,832,750
Shareholders' Equity	429,988	136,984	-	543,180	486,824
Retained Earnings	(34,307)	(26,632)	-	120,107	79,396
Earnings before Tax	(36,891)	(27,414)	-	144,065	109,390
Working Capital	436,094	132,387	-	419,987	567,133
Stated Capital	505,850	162,017	-	70,000	70,000

Table 5: Cal Bank Ghana Limited- Annual financial Reports (Ghc'000)

Details	2019	2018	2017	2016	2015
Total Assets	5,405,856	4,212,638	3,599,355	3,351,039	2,707,542
Total Liabilities	4,641,284	3,565,211	3,096,587	2,845,176	2,315,222

Shareholders' Equity	764,572	647,427	502,768	505,863	392,320
Retained Earnings	162,940	1,455,166	7,203	160,042	140,352
Earnings before Tax	230,353	208,337	12,085	213,197	194,386
Working Capital	466,414	469,220	390,937	493,407	393,410
Stated Capital	400,000	100,000	100,000	100,000	100,000

3.1.3 Data Analysis

Data collected was analyzed using financial ratios and Altman Z score model. Considering the research objectives, a total of ten ratios falling under three major categories of financial ratios and the Altman Z score were applied. The analysis considered five of the most recent financial statements published by the sampled banks. The ratios used, their formulae, and interpretations are below;

Profitability Ratios

Profitability ratios were used to measure the ability of firms to generate profit on its resources during a period of time. They show how well a firm is utilizing it assets. Whiles there are established benchmarks for some of the ratios, according to Sarpong et al (2015), other ratios do not have any standard, instead the performance of individual firms are compared to that of the industry or firms of similar size. This means that there is generally no ideal ratio as far as some financial ratios are concerned. For this reason, in its quest to make concrete prediction of a bank's possibility to fall in financial distress, the researcher compared the individual banks against each other and that of the industry. The higher a bank's ratio is, the more profitable the bank is hence, the likelihood the bank would continue to operate in good health financially. However, where a bank obtains a lower ratio persistently, then there is an indication the bank might be insolvent and could become bankrupt in the near future. This study adopted two of these ratios, which are represented by the following formulas;

➢ Return on Assets Ratio = (net profit/total assets) *100
➢ Return on Equity Ratio = (net profit/shareholders' equity) *100

Liquidity Ratios

Liquidity ratios measure a firm's ability of retiring its short-term obligations with its current assets. Though the ideal ratio depends to some extent the type of business, generally, a ratio of 2:1 (that is 200%) is considered optimal. This means that for every GH₵1.00 that a firm owes in current liabilities, it has GH₵2.00 worth of current assets which can pay off the liabilities and still have reserves to keep the business going. Whiles a lower ratio means the firm is unable to pay its short-term bills on time, a higher ratio means the firm has idle funds that could be put to better use. Specifically, while a quick ratio of 1:1 (100%) is considered ideal, a cash ratio of 0.5:1 (50%) is considered optimal (www.thebalancesmb.com).

For the purpose of this study three liquidity ratios were considered, namely Current Ratio and Quick Ratio. Their mathematical representations as used in this study are represented below;

➢ Current Ratio = (Current Assets/Current Liabilities) *100
➢ Quick Ratio = (cash &cash equivalents + marketable securities +receivables/ current liabilities) *100

Leverage Ratios

Leverage ratios were utilized to find out the solvency of firms. These ratios measure the extent to which firms use debt as part of their operations. Optimally, leverage ratios should be 0.21:1 (that is 21%) as stated by Barth and Miller (2017). This means that firms' capital of GHC100.00 should consist of at most GH₵21.00 debt. The lower it is, the better for the business. A debt-to-equity ratio of 1.5:1 (150%) or lower according to Maverick (2019) is favorable whiles anything higher is considered less favorable. Also, a long term to capital ratio of 0.5:1 (50%) is considered ideal as opined by Nguyen (2018). This study considered two leverage ratios in its quest to determine the solvency of the banks adopted for this study. The adopted leverage ratios are represented mathematically below;

➢ Debt to Assets Ratio = (total liabilities/total assets) *100
➢ Debt to Equity Ratio = (total liabilities/shareholders' equity) *100

Altman Z-Score

The Altman Z-Score model is used to compliment the use of accounting ratios in analyzing the performance of banks and subsequently compute the Z score for listed banks on the basis of four variables which are; working capital, retained earnings, earnings before interest and tax, book value of equity, total liability and total assets.

Altman (1968) defined the Z-score as linear combination of number of financial ratios as follows: $Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$

This is a four-factor equation to help make prediction of bankruptcy for non-manufacturing firms in the emerging market.

Where;

- ➢ X1 is the ratio of Working Capital to Total assets. It estimates company's ability to cover financial obligations.
- ➢ X2 is the proportion of Retained Earning to Total Asset. This ratio measures cumulative profitability over time as a proportion of total assets.
- ➢ X3 is the ratio of Operating profit to Total Assets. It depicts the managerial efficiency in terms of profitability of the business. Earnings before interest and tax (EBIT) have been used as a proxy to operating profit.
- ➢ X4 is the ratio of Book value of equity to Total Liabilities of the corporate house. It expresses the financial leverage i.e. the proportion of equity. A high value of ratio depicts firm's aggressiveness in financing its growth with debt. If the cost of the debt financing outweighs the return that the company generates on the debt, it could even lead to the possible bankruptcy.

Altman model (1968, 1982, and 2006) suggests that if a financial institute secures more than 2.99 score, it should be placed in safe zone. But if it is unable to secure even 1.81 Z score it should be assumed in distress zone and it is more prone to bankruptcy. If the value of Z score is in between 1.81 and 2.99, it should be treated in grey zone. The present study computes Z score for all 5 banks during a period of 5 years from 2014 to 2018. It assigns ranks to public and private sector banks. The study also ranks these banks on the basis of liquidity, profitability and leverage ratio so as to analyze whether the hybrid model has an edge over the others or it produces the same results.

4.1 RESULTS AND DISCUSSIONS

4.1.1 Liquidity Ratio

The table 4.1 below shows the Current ratios and Quick ratios of the selected banks in relation to Liquidity Ratio.

Table 6: Liquidity Ratio

	Current Ratio					
BANK	**2019**	**2018**	**2017**	**2016**	**2015**	**AVG**
GCB Bank	1.18	1.16	1.18	1.24	1.24	1.20
Fidelity Bank	1.11	1.13	1.14	1.17	1.19	1.15

BANK	2019	2018	2017	2016	2015	AVG
Agric Development Bank	1.19	1.11	1.13	1.12	1.18	1.15
National Investment Bank	3.29	2.14	-	1.15	1.16	1.94
Cal Bank	1.08	1.12	1.10	1.16	1.16	1.12
						1.31

Quick Ratio						
BANK	**2019**	**2018**	**2017**	**2016**	**2015**	**AVG**
GCB Bank	0.22	0.12	0.23	0.21	0.35	0.23
Fidelity Bank	0.86	0.15	0.21	0.32	0.22	0.35
Agric Development Bank	0.12	0.15	0.25	0.23	0.30	0.21
National Investment Bank	2.16	1.07	-	0.64	0.56	1.11
Cal Bank	0.41	0.20	0.85	0.90	0.52	0.57
						0.49

Source: Annual financial reports of selected banks

➢ **Current Ratio**

The current ratio revealed how the banks' current assets were able to cover their current liabilities. From the current ratios obtained, none of the banks made the optimal ratio of 200%. However, in 2019 and 2018, the National Investment Bank obtained 3.29 (329%) and 2.14 (214%) respectively which were above the optimal ratio. This indicates the availability of idle funds which can be invested to generate additional revenue. On the average, the banks ratios were below the optimal. The banks were unable to retire their current liabilities with their

available current assets. The banks are there likely to face liquidity challenges should their creditors demand immediate settlement.

➤ **Quick Ratio**

Also known as acid test ratio, this ratio measures the ability of the banks to retire their current liabilities relying on their cash and near cash assets. With 100% being the ideal, indications from the table above are that the banks were unable to meet the standard with the exception of National Investment Bank 2.16 (216%) and 1.07 (107%) in the years 2019 and 2018 respectively. The banks total average of 0.494 representing 49.4% was way below the expected. The individual ratios were testament to this fact as no bank attained the standard 100% ratio on the average apart from National Investment Bank with an average of 110.8%.

4.1.2 Profitability Ratios

In assessing the Profitability level of selected banks, Return on Equity and Return on Assets were the two ratios considered. Table 4.2 below reveals the results.

Table 7: Profitability Ratios

Return On Equity (expressed in percentage)						
BANK	**2019**	**2018**	**2017**	**2016**	**2015**	**AVG**
GCB Bank	24.4	19.11	30.02	29.50	40.92	28.79
Fidelity Bank	23.7	16.93	2.98	29.32	21.29	18.84
Agric Development Bank	1.63	5.53	(23.25)	(30.10)	13.92	(6.45)
National Investment Bank	(79.80)	(19.44)	-	22.11	16.31	(15.21)
Cal Bank	21.31	22.42	1.43	31.64	35.77	22.51
						9.70

Return On Assets (Expressed in percentage)						
BANK	**2018**	**2017**	**2016**	**2015**	**2014**	**AVG**
GCB Bank	3.04	0.22	5.24	4.94	6.38	3.96
Fidelity Bank	2.33	1.68	0.35	3.60	2.71	2.13
Agric Development Bank	0.16	0.75	(3.50)	(4.70)	2.23	(1.01)
National Investment Bank	(5.36)	(10.23)	-	4.52	3.42	(1.91)
Cal Bank	3.01	3.62	0.20	4.76	5.18	3.35
						1.30

Source: Annual financial reports of selected banks

➤ **Return on Equity**

Results from Table 4.2 above reveals that, Equity funds in GCB bank generated most in the five-year analysis in terms of the percentages with an average return rate of 28.79%. Cal bank's equity had second highest average with 22.5% whiles ADB and NIB had the least return rate among the listed banks with an average rate of negative 6.45% and negative 15.21%. There were negative return rates in the equity funds of ADB during the 2017 and 2016 analysis with returns on equity as low as -23.25% and -30.10% respectively. NIB also recorded a negative rate of return -79.80% and -19.44% in 2018 and 2017 respectively. Fidelity bank made the third most net profit among the five banks with its average return of 18.84%. GCB bank's profit generation was higher than the industry in each of the five years of the analysis. Cal bank and Fidelity bank also had higher net profit generation as compared that of the industry albeit below that of GCB bank.

➤ **Return on Assets Ratio**

The table above reveals that; the assets return generation was generally low as indicated by the banks' averages. GCB bank led the way with an average generation of 3.96%, Cal bank followed with 3.35%, with Fidelity bank recording 2.13% whiles ADB and NIB had the least

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average return on assets rate with negative 1.01% and negative 1.91% respectively. The implication is that averagely whiles GCB bank makes GH¢0.39 net profit on every GH¢1.00 worth of assets, Cal bank makes GH¢0.33, Fidelity bank makes GH¢0.21, with ADB and NIB rather making a loss of 0.10 and 0.19 respectively. Management of GCB bank made judicious use of the bank's assets more the others and it remained more profitable than the industry. Management of ADB and NIB could not use their assets to generate excess income over expenditure for the banks.

4.1.3 Leverage or Gearing Ratio

In ascertaining the leverage proportions of the various banks, leverage ratios were used. These ratios examine the amount of debt that the various banks have employed as part of their capital structure. Two of these ratios were used to assess the selected banks in this study. Tables 4.3 below depicts the results obtained

Table 8: Leverage or Gearing Ratio

DEBT TO ASSET

BANK	2019	2018	2017	2016	2015	AVG
GCB Bank	0.88	0.88	0.83	0.82	0.84	0.85
Fidelity Bank	0.90	0.90	0.88	0.87	0.87	0.88
Agric Development Bank	0.82	0.86	0.85	0.84	0.84	0.84
National Investment Bank	0.33	0.47	-	0.79	0.79	0.59
Cal Bank	0.86	0.84	0.86	0.85	0.86	0.85
						0.80

DEBT TO EQUITY

BANK	2019	2018	2017	2016	2015	AVG

GCB Bank	7.02	7.58	4.95	4.68	5.41	5.92
Fidelity Bank	9.14	9.06	7.45	7.16	6.84	7.93
Agric Development Bank	4.62	6.40	5.67	5.41	5.27	5.47
National Investment Bank	0.48	0.90	-	3.88	3.76	2.25
Cal Bank	6.07	5.51	6.16	5.62	5.90	5.85
						5.50

Source: Annual financial reports of selected banks

➢ **Debt to Assets Ratio**

Table 4.3 above in respect of Debt to Assets reveals that Banks on the average during the five years used up to 80% debt in financing their assets. On the average Fidelity Bank employed 88% debt for their assets, GCB and Cal bank followed closely with 85% each while ADB and NIB were rightly behind with 84% and 59% respectively. These ratios are way above the required 21% expected. This indicates that the banks have taken on more debts in financing their assets than expected.

➢ **Debt to Equity Ratio**

This ratio measures the relative proportions of debt and equity as they are employed in the financing of the firm's activities. The table 3 above illustrates the proportions of debt and equity of the respective banks. The table indicates that the banks make more use of debt as compared to equity in their operations. On the average FBL's debt employed is over 7x that of its equity, Cal bank, ADB and GCB bank have above 5x of their respective equity funds and NIB used a little over 2x of its equity funds. These ratios are significantly above the 150% which is an indication of the banks utilization of more debts as compared to equity. Even though none of the banks attained the standard 150%, NIB'S 225% was the least among the banks, followed by ADB's 547% being lower than Cal bank's 585%, GCB bank's 592%, Fidelity bank's 793%, and the industry's 548.4%.

This Means that NIB employs GH¢2.25 debt against the bank's GH¢1.00 equity, ADB employs GH¢5.47 debt against the bank's GH¢1.00 equity, Cal bank GH¢5.85 debt against

GH¢1.00 equity, GCB bank GH¢5.92 debt against GH¢1.00 equity, and Fidelity bank GH¢7.92 debt against GH¢1.00 equity.

4.1.4 Predicting Bankruptcy Using Accounting Ratios and Alman Z-Score

The Z-score has gained widespread acceptance as a measure of bank stability and the inverse of the probability of insolvency in the bank industry and financial stability literature (Bouvatier, Lepetit, Rehault and Strobel, 2017). The researcher used Altman (2006) Z-score Plus to potentially compare capitalization and returns or variability and returns. This was made possible by the use of accounting data. Table 4 has computed results for the Z-Score

Table 9: Predicting Bankruptcy Using Accounting Ratios and Altman Z-Score

Z-Scores for Listed Banks

BANK	2019	2018	2017	2016	2015	AVG
GCB Bank	1.47	1.06	1.56	1.98	2.08	**1.63**
Fidelity Bank	0.92	1.04	0.90	1.23	1.23	**1.06**
Agric Development Bank	0.29	0.92	(0.03)	0.33	1.30	**0.56**
National Investment Bank	6.41	3.65	-	1.58	2.05	**3.42**
Cal Bank	1.06	2.23	0.78	1.59	1.65	**1.46**
						1.63

Source: Annual financial reports of selected banks

From the above table 4.4, it reveals that none of the banks obtained the required score of 2.99 and above being the risk-free zone, over the last five years apart from NIB. NIB even though with a score of 2.05 being in grey zone in 2015 and with a score of 1.58 in 2016 being in distress zone managed to incline sharply with a score of 3.65 and 6.41 in 2018 and 2019 respectively, thereby keeping the bank in a healthy and safe zone.

The only bank which did a bit well among the other four banks with the underscore below 2.99 was GCB. The bank had a score of 2.08 and 1.98 in the year 2015 and 2016 respectively which kept it in grey zone and heading towards risk free. GCB unfortunately could not step

up a bit on its performance to get to the optimal safe zone required of 2.99 and above, but rather had a diminishing score of 1.56, 1.06 and 1.47 in the years 2017, 2018 and 2019 respectively, thereby keeping it in a distress zone. Cal Bank and Fidelity Bank followed with an underscore below 2.99 and 1.81 in the five years period also putting them in a distress zone.

4.1.5 Discussion of Findings

The analysis above revealed trends that might be of interest to stakeholders about the five banks.

➢ **Liquidity**

The selected banks seem to be not doing so well as far as banks' liquidity is concerned. The banks on the average failed to keep the needed ratio, the overall liquidity was below the standard 200%. This might be as a result of the banks' failure to keep enough assets in the form of non-fixed assets or the banks' pleasure in keeping most of their debts in the form of short-term debts. Another reason might be that the banks are investing all their liquid funds with the view of earning additional returns. The Business and Financial Times Online also suggests that the illiquid nature of the banks may be as a result of the banks experiencing cash flow constraints, high fixed costs, and generating revenue that are sensitive to economic recessions. With banks contributing more than GH₵200million in form of additional capital to the central bank, one would have expected that the banks liquidity would have been positively affected. The bank of Ghana's Banking sector report (2019) posits a contrary outcome. The report states that the sector's liquidity is adequate. The findings of Sumaila (2015) suggest that the banking sector of Ghana's liquidity is above the global average.

➢ **Profitability**

Analysis of the banks' audited financial statements revealed that the banks profit levels are averagely above the industry average even though; ADB and NIB did attain losses for two consecutive years each within the five years period. This overall indicates that the banks are profitable. According to Gyenti (2019), the Ghana banking sector remained profitable with the industry seeing an 8% year on year growth in terms of the average operating revenue. The banking sector report (2019) positions that the banking sector's profitability moderated, with growth reducing from 21.7% in 2017 to 1.5% in 2018. The decline, according to the report, is as a result of the general decline in interest rates, lower levels of loans, and borrowings. The Ghana Report (2019), posits that in spite of the challenges confronting the banking sector in Ghana, it remained profitable. Ebonyi-Amoah (2017), on his part however, states that the profitability of the banking sector in Ghana is generally low.

➢ **Solvency**

Analysis of the solvency positions of the banks indicate that the banks are highly leveraged. In other words, the banks took on more debts during the period of analysis in their operations. This might be the nature of the sector as almost all the banks analyzed seem to be heavily leveraged. Caprio and Kingebiel (1996) opine that insolvency of banks can be traced to the late 1970s. They added that the issue of solvency dates back in 33 A.D. This suggests that the leverage positions of the banks revealed is not new. According to Kapotwe (2018), at one point the governor of the Bank of Ghana described some of the banks as "deeply insolvent".

➢ **Altman Z-score Model**

Considering the overall average scores of the industry with 1.63, it therefore implies that, only NIB is safe from bankruptcy whiles the other four selected banks are in distress zone and likely to declare bankrupt should creditors run to them for immediate settlement. This model however, agrees with the liquidity and Leverage ratios computed, which indeed reveal that only NIB is the most liquid bank which is capable of given its creditors immediate settlement, among the five selected banks.

5.1 CONCLUSIONS AND RECOMMENDATIONS

The liquidity ratios indicated that none of the banks was able to meet the acclaimed 2:1 ratio. National Investment Bank Limited appeared to be more liquid than the other banks as its ratios were relatively higher. The leverage ratios revealed that the banks are highly leveraged and again, NIB was relatively low in leverage. The banks used a lot of debt in their operations during the years under review. This confirms the position of the regulator in its banking sector report (2019), which indicated that the banking sector's borrowings had risen by 71% in 2018. Long term debts however constituted the minority in these borrowings. The position was further reiterated during the debt-to-equity analysis of the banks. With increase in assets, one would have expected the profit levels of the banks to increase significantly if not proportionate to the asset's growth. This was however not to be as the banks made just marginal improvements in their profitability levels despite the fact that their average profit levels were higher than the industry average. General indications point National Investment Bank limited to be the most liquid among the sampled banks despite the fact that its average ratio was a little below the 2:1 (200%) ratio. The leverage ratios revealed that all the banks were highly leveraged with again, NIB having the least ratios on the average notwithstanding the fact that its ratios were also on the high side. Thus, NIB did better in the leverage ratios. GCB Bank led the way in the profitability ratios, with Fidelity Bank Limited and Cal Bank closely following, then ADB and NIB made an average loss over the years under review.

Finally, the Altman Z score reveals that four banks namely, GCB, ADB, Fidelity and Cal bank obtained below the required score of 2.99 to be in bankruptcy safe zone. Only NIB can boost of an average score of 3.42 which is above the required score. This outcome agrees with the outcomes from the Liquidity ratio and Leverage ratios. The implication therefore is that,

apart from NIB being in safe zone, GCB could be in a grey zone with relatively high score. The other three banks under study which include Cal Bank, ADB and Fidelity bank are already in distress zone and could declare bankrupt should their creditors demand for immediate settlements.

Having analyzed the distress state of the banks over five years period in the course of this study, the following recommendations are made;

1. To avert the problem of disappointing their clients, the banks should keep more liquid assets in order to meet their short-term obligations as and when they may fall due.
2. The banks should slow down the rate of their borrowings. This will reduce the costs associated with them, thereby increasing their profits, and in the process boosting investors' confidence.
3. The banks should focus on improving their profitability levels so that more investors would be attracted. The banks can do this by reducing their lending rates for example, which will lead to more borrowers being attracted resulting in more interest income in the process.
4. Returns on the banks' assets should be maximized by the banks seeking income generation avenues aside the lending rates. The banks can venture into investments to get additional income.
5. The banks can also resort to long term borrowings instead of the ever-increasing short-term funds. This will relieve them of the tendencies of keeping funds, which could have been invested idle, just to meet short term debts.

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