APPLICATION OF EDWARD ALTMAN Z SCORE MODEL ON MEASURING FINANCIAL DISTRESS OF COMMERCIAL BANKS LISTED ON RWANDA STOCK EXCHANGE (2015-2019)

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ABSTRACT

The overall aim of this research was to assess how factors of financial distress affected the financial performance of Commercial Banks listed on RSE from 2015 to 2019 by applying Altman failure prediction model. The researcher targeted 3 Banks in this study. This concerned Bank of Kigali Plc (BK Plc), Kenya Commercial Bank Ltd (KCB Ltd) and I&M Bank Plc. Establishing whether liquidity as a factor of the distress affects the financial performance of commercial banks was the first objective of this study. The rise from 22.1, 23.8 and 50.7 percent of demand deposits, quasi money and treasury bills holding from the period 2016 to 2019 is the main cause of operating with liquidity problems as revealed by the study. The application of Z-Score model revealed that there is a highly likelihood that the bankruptcy will occur because Z-Score is below 1.8 for all 3 Banks under study for five years.

***Key words**: Factors of Financial Distress, High Likelihood of Bankruptcy*

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INTRODUCTION

The evaluation of financial health of Banks is and will continue to be essential following its important and critical role in the economic and financial growth. According to National Strategy for Transformation 1 (NST1), the Economic Transformation Pillar presents a strategy to accelerate private-sector-led economic growth and increased productivity by increasing domestic savings and position Rwanda as a hub for financial services to promote investments.

Financial distress contributed to the failure of many companies worldwide. Examples of companies like ABB in the United States of America and Swissair went into liquidation.

Following the crisis in Europe in July 2011, investors started to focus to the performance results of the companies they invested in. They started to analyze and make sure that there is a going concern in the company they have shares.

In addition to the above, the open competition raised concerns and involvement of all stakeholders in knowing the critical assessment and evaluation of Banks. One of the indicators of strong company is the strong financial performance. The company with financial problems does not perform better and this was concluded by (Tan, 2012) and during the study on the contribution of financial distress on the performance of the company using regression analysis. The conclusion for the study is that companies have to be financially viable in order to better perform and play a role in the positive growth of the economy.

To be on the safe side, the intense assessment of the performance of any company is a prerequisite and a key to success for involved parties. Being aware of the stand of their shareholding will make them happier and confident (Ramaratham, 2010).

In our country, Rwanda, the banking sector is new as the first financial institution to open was the former Commercial Bank of Rwanda in 1963 (Today is I&M Bank Rwanda Ltd. As at 30th June 2018, Rwanda had 11 Commercial Banks, three microfinance Banks (MFIs), Development Bank of Rwanda as development bank and Zigama Credit and Saving Scheme (ZIGAMA CSS) as Cooperative Bank .

It is necessary for managers, shareholders and other relevant stakeholders to know the financial health of companies and this is their main function. The result will help to readily available information to base on by deciding whether the company is viable and the economy is growing.

The Z score model formula was developed in 1968 by Edward I. Altman an assistant Professor of finance at New York University by then. The models' main purpose was to predict the probability that a firm will go into bankruptcy.

Edward I Altman who was assistant Professor of finance at New York University at that time developed Z Score model in 1968 and its main objective was to establish the likelihood that companies will fail. For him, to determine the financial viability of the company, the statement of revenues and expenses and the statement of financial position are used (Altman, 2003). According to the study conducted in the financial institutions from Nigeria revealed that liquidity, operating efficiency and assets turnover are the main variables of the Altman's Z Score and key tool to confirm the financial viability of the Bank (Pam, 2013).

The focus of the study was 2 extremes of performance where 2 best performing banks and 2 with low performance were assessed. To use 5 years period in assessing whether companies are financially healthy using Altman's score model was recommended by Alexia (2008) in his study. He wanted to confirm whether Z Score could be used to predict failures.

Problem Statement

The development of a country depends on development and expansion of many sectors

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including banking. None can ignore the role of financial institutions in the development of any country.

To know how the financial health of financial institutions is a pre-requisite in order to be aware on how to properly manage factors that may lead to failure.

Reference made to the Annual Financial Stability Report conducted by National Bank of Rwanda[1], there has been credit expansion decelerated as banks took a cautious lending stance amid high non-performing loans. The closure of Crane Bank in October 2016 – Rwanda Branch created a fear among customers and there is a need to conduct this research in order to determine how Banks are financially strong to be able to satisfy shareholders.

This study opted to use Altman's Z Score model as a measure of the financial distress of commercial banks listed on the RSE for the period from 2015 to 2019.

The study is different from others that use ratios to assess the financial performance of Banks.

Objectives of the Study

In order to effectively deliver on the general objective, the following specific objectives have been developed:

- To establish the effect of liquidity on financial distress of commercial banks listed on RSE
- To determine how the level of retained earnings (RE) will influence the financial distress of Banks listed on RSE
- To examine the impact of operating profit (EBIT) on the financial distress of listed banks listed on RSE
- To examine the extent to which market value of equity and total liabilities affect the financial distress of listed commercial banks in Rwanda.
- To establish the extent to which sales level to total assets impacts the financial distress of Banks listed on RSE

LITERATURE REVIEW

Agency Theory

This theory explains and resolves issues relating to the acts of principals and their agents where the later represents the principals in a particular business transaction. The poor performance of agents affects the owners of the companies (Jensen & Meckling, 1976).

The performance of agents is benefited by both agents and principals and they are always supposed to represent their bosses and required to work in the best interest of the principals, no self interests. They are accountable for all their acts and both benefits from companies' better financial performance (Jensen & Meckling, 1976).

Keynes's liquidity preference model of interest

The demand for and supply of money determine the interest rate (Keynes, 1935). The desire of the public to hold cash is defined as liquidity preference and there are 3 reasons for the public to hold cash namely transaction, precautionary and speculative motive.

Transaction motive: People need cash for the transactions of the business. Individual and companies hold cash in order to sort out the issue of gap between income and related expenditure and this is called income motive

Business owners also need to keep cash in order to be able to meet their business short term needs whenever they fall due and this is called business motive.

Precautionary motive: Business owners prefer to hold cash in order to be in a position to pay for unplanned events or contingencies including unemployment, accidents, illness, school fees increase. Again, the preference to keep liquid cash

[1] Annual financial stability report (July 2017 June 2018) by NBR, page15

originate from the fear of future events and other unfavorable conditions or deals. This is in line with the management of distress that may occur at any time.

Speculative motive: Some business men or companies prefer to keep money in order to gain from the change of interest's rate in future. This practice is one of the ways of keeping the company financially viable by increasing the income and minimize by all means unnecessary costs.

This theory highlights the importance of cash, working capital management and the role of effective management of day to day business transactions that lead to financial performance.

The deviation from the good practices indicated above may lead to financial distress.

Multiple Discriminant Analysis Model (MDA)

Altman (1968) was the first researcher to apply the MDA approach to the bankruptcy prediction domain. The application of MDA to predict failure was first made by Altman (1968) and thereafter the model became international accepted bankruptcy measure because he used it for 33 failed and 33 better performing companies to confirm its use. This technique easily identifies the distressed companies and those with financial stability using 5 ratios and their weight to arrive at a conclusion.

The result is obtained from the formula below and provide a discriminate zone or Z-Score or Zeta Model (Altman, 1968).

$Z\text{-Score} = 1.2T_1 + 1.4T_2 + 3.3T_{3+} 0.6T_4 + 0.999T_5$

Rations are as follows:

T_1 is equal to Working capital over total assets

T_2 is equal to Retained earnings over total assets

T_3 is equal to Earnings Before Interest and Taxes over Total assets

T_4 is equal to market value of Equity over total liabilities

T_5 is equal to sales over total assets

Conceptual Framework

Figure 1 conceptualizes that financial distress factors (working capital, retained earnings, operating profit, equity and sales) influence on financial performance for listed commercial banks in Rwanda.

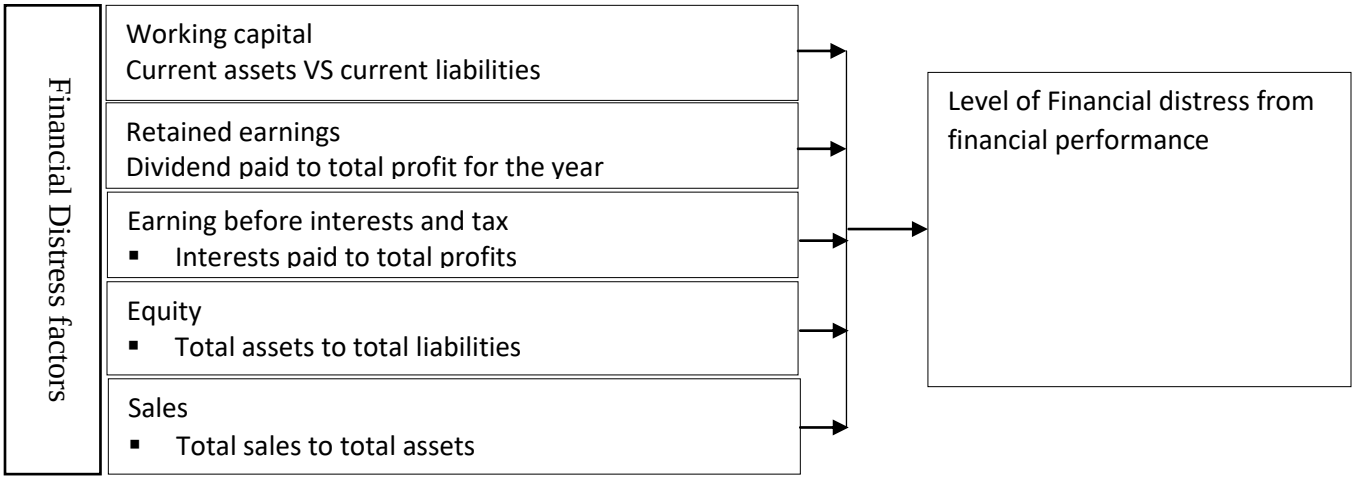

Figure 1: Conceptual Framework

Source: Designed by the researcher

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METHODOLOGY

This study followed a descriptive research design as the study sought to determine the causal relationship between working capital, Retained earnings, earnings before interests and taxes and sales to total assets and market value of equity to total liabilities. A descriptive study design used to find out the present state of affairs in relation to the effect of working capital, retained earnings, earnings before interests and taxes, sales, total assets and total liabilities to the financial performance of banks. Furthermore, the descriptive study design is preferred since it is suitable and is applicable in researches to be carried out within little time. The research targeted 3 commercial Banks that were listed to Rwanda Stock exchange from 2015 to 2019 (from January to December each year). There was no sampling required as the population was small and it was easy to get data from 3 Commercial banks.

The present study used the available data called secondary data. They were available immediately and it was easy to get them and analyse. To be effective, the study required to conduct an analysis of data from past 5 years in order to establish the trend. All information used were obtained from published and audited financial statements for each year from January 2015 to December 2019. For the purpose of this study, secondary data was the only applicable option since the study sought to establish the level of financial distress for listed commercial banks; which could only be possible by studying past data. This could only be possible by analysing the trends and the relationship between the variable which could be established by studying secondary data. The required data sets were audited financial statements for each year from 2015 to 2019 and annual reports. To effectively communicate the findings following their related objectives and study questions, tables and charts were used. Data processing included editing, coding, tabulating and synchronising using excel. The information obtained were analysed using Altman Prediction Model (Z-score model). Data were organised and interpreted. According to Altman, the result was obtained using the following formula: Z-Score model is derived by: 1.2A + 1.4B + 3.3C + 0.6D + 1.0E

And the above formula is made of (in details):

A is defined as the working capital divided by total assets of the company. This ratio indicate how liquid is the company.

B is the retained earnings divided by the total assets of the company and indicate how profitable the company is.

C is the ratio of earning before interests and taxes (EBIT) divided by total assets of the company.

Where EBIT is used to compare profitability between companies and industries because it eliminates both the effects of financing (EBIT) and accounting decisions relating to depreciation and amortization rates (DA). EBIT is the measure of a company's profitability. EBIT calculation is done by deducting the cost of goods sold and operating expenses. It does not deduct the expenses related to interest or tax payments.

D is the measure of the market value of equity over book value of total liabilities

E this is the measure of how assets are easily being used to generate revenues. The ratio is obtained by taking sales and divide them with total assets of the company.

After obtaining the value of Z-Score, the ranking is provided as follows to determine that a given company is likely to fail or is financially healthy.

- When the results of the weighted average (Z) from the 5 formula is greater than 2.99 (Z > 2.99) the company is in **"Safe" Zone**
- When the results of the weighted average (Z) from the 5 formula is between 1.81 and 2.99 (1.81 < *Z* < 2.99) the company is in **"Grey" Zone**

- When the results of the weighted average (Z) from the 5 formula is less than 1.81 ($Z < 1.81$) the company is in **"Distress" Zone**

FINDINGS

Effects of liquidity on financial distress

The analysis was done to determine the liquidity issue with all Banks by assessing the capability to cover its day to day financial requests and whenever they fall due. Contrary to the theory of H G Guthmann, the study revealed a negative working capital where current liabilities exceeded current assets. The results were in table 1 and the overall results summarized in table 1 and figure 2.

Table 1: Showing the relationship between the working capital and total assets

BK Plc			
Year	**Working capital in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	(122,050,914)	561,226,400	(0.22)
2016	(178,739,858)	638,336,598	(0.28)
2017	(90,960,985)	727,204,700	(0.13)
2018	(339,988,507)	877,401,364	(0.39)
2019	(268,485,935)	1,019,075,586	(0.26)
KCB Ltd			
Year	**Working capital in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	8,622,549	149,642,709	0.06
2016	11,574,888	147,789,100	0.08
2017	10,967,875	158,049,646	0.07
2018	11,443,653	209,113,658	0.05
2019	11,689,623	197,234,414	0.06
I&M Bank Plc			
Year	**Working capital in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	-20,186,099	199,949,490	-0.10
2016	-19,180,874	233,930,662	-0.08
2017	56,408,630	260,174,192	0.22
2018	19,740,615	294,165,633	0.07
2019	-12,008,650	317,899,026	-0.04

Source: Secondary data

Table 2: Showing the comparison of the relationship between working capital and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Bank name/Year	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
BK Plc	-0.22	-0.28	-0.13	-0.39	-0.26	-0.26
KCB Ltd	0.06	0.08	0.07	0.05	0.06	0.06
I&M Bank Plc	-0.1	-0.08	0.22	0.07	-0.04	0.014

Source: Secondary data

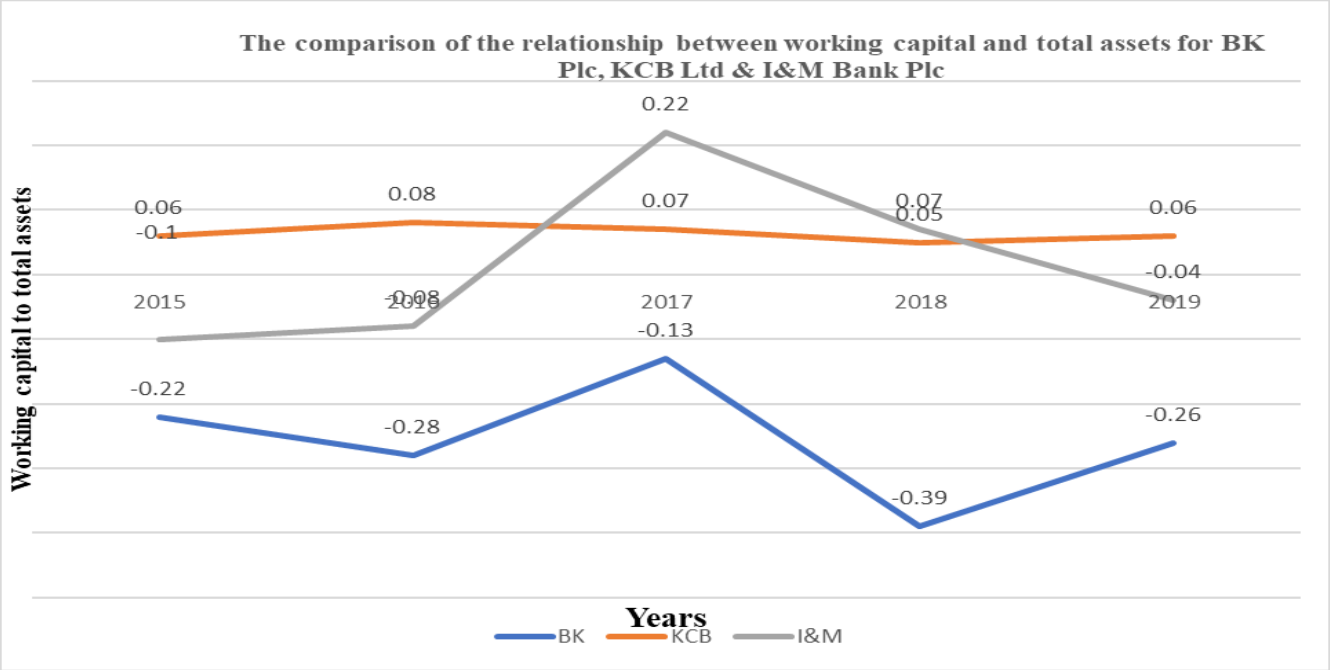

Figure 2: Illustrating the comparison of the relationship between working capital and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Source: Secondary data

Table 2 and figure 2 showed that the working capital to total assets ratio for Bank of Kigali Plc and I&M Bank Plc was negative for the 5 and 3 years respectively where they experienced a liquidity gap. The research revealed the liquidity problems where current liabilities were more than current assets and there is no financial means to help Banks to operate on daily basis (E W Walker, 1964). The decrease in the ratio originated from a higher growth in total short-term liabilities compared to the growth in total liquid assets. The low ratio is the results of cumulative liabilities (current) compared to liquid cash obtained from sales made during the period.

Failure to maintain sufficient liquidity level originated from the increase in liabilities, that increased by 10% to 29% in Bk Plc and from 19% to 50% in KCB Ltd and from 12% to 25% in I&M Bank Plc from 2016 to 2019. The rise from 22.1, 23.8 and 50.7 percent of demand deposits, quasi money and treasury bills holding from the period 2016 to 2019 is the main cause of operating with liquidity problems as revealed by the study. Those Banks failed to meet their short-term obligations.

Extent to which the level of retained earnings influence the financial distress

It is the remaining company's net income after the payment of dividends to shareholders (Chasan, 2012). The analysis was done to determine the ability of the 3 Banks to fund its assets. The results are in table 4.3 below and the overall results provided in table 3 and figure3.

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Table 3: Showing the relationship between retained earnings and total assets

BK Plc			
Year	**Retained earnings in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	55,810,954	561,226,400	0.10
2016	69,435,204	638,336,598	0.11
2017	84,068,437	727,204,700	0.12
2018	96,995,779	877,401,364	0.11
2019	120,864,519	1,019,075,586	0.12
KCB Ltd			
Year	**Retained earnings in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	(798,361)	149,642,709	(0.01)
2016	1,186,802	147,789,100	0.01
2017	3,024,636	158,049,646	0.02
2018	3,729,616	209,113,658	0.02
2019	10,073,654	197,234,414	0.05
I&M Bank Plc			
Year	**Retained earnings in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	17,478,880	199,949,490	0.09
2016	20,250,802	233,930,662	0.09
2017	24,056,367	260,174,192	0.09
2018	28,763,104	294,165,633	0.10
2019	33,437,216	317,899,026	0.11

Source: Secondary data

Table 4: Showing the comparison of the relationship between retained earnings and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Bank name/Year	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
BK Plc	0.10	0.11	0.12	0.11	0.12	0.11
KCB Ltd	(0.01)	0.01	0.02	0.02	0.05	0.02
I&M Bank Plc	0.09	0.09	0.09	0.10	0.11	0.10

Source: Secondary data

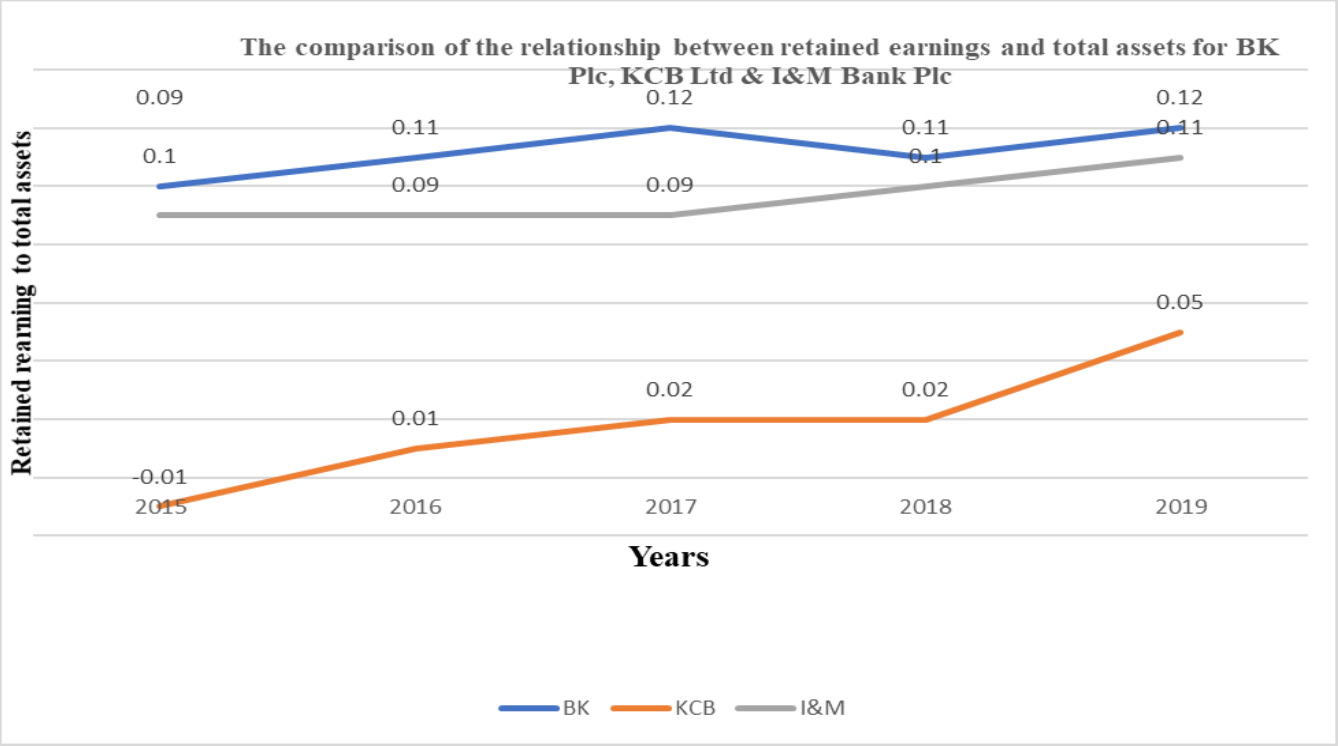

Figure 3 Illustrating the comparison of the relationship between retained earnings and total assets for BK, KCB & I&M Bank

Source: Secondary data

Table 4 and figure 3 showed that the retained earnings for the 5 years are lower compared to total assets. Banks relies on debt, or leverage. Banks funded its assets by borrowing instead of through retained earnings which, again, increases the risk of bankruptcy.

The capacity of Banks to invest retained earnings in selected high level and better performing projects that are capable of quickly generate cash to buy assets is lower. More earnings from effective investments are the main reasons of rise of share price (Baker, 2009).

According to Altman Predication model, on average the Banks capacity to finance assets is 11% for BK Plc, 10% for I&M Bank Plc and 2% for KCB Ltd.

The extent to which the EBIT level affect the financial distress

The ability of the Bank to generate cash from its operations (António Gomes Mota, 2017) was assessed for the 5 years under study.

The analysis was done to determine how Banks were generating revenues from the capital they invested in assets. The summarized information are in the table 5 and the overall results summarized in table 6 and figure 4.

Table 4: Showing the relationship between EBIT and total assets

BK Plc			
Year	**EBIT in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	25,737,232	561,226,400	0.05
2016	29,981,115	638,336,598	0.05
2017	34,172,034	727,204,700	0.05
2018	42,601,625	877,401,364	0.05
2019	49,697,482	1,019,075,586	0.05
KCB Ltd			
Year	**EBIT in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	3,223,323	149,642,709	0.02
2016	2,812,769	147,789,100	0.02
2017	3,859,761	158,049,646	0.02
2018	3,723,268	209,113,658	0.02
2019	8,439,471	197,234,414	0.04
I&M Bank Plc			
Year	**EBIT in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	7,124,086	199,949,490	0.04
2016	8,415,205	233,930,662	0.04
2017	23,037,880	260,174,192	0.09
2018	25,746,004	294,165,633	0.09
2019	27,395,198	317,899,026	0.09

Source: Secondary data

Table 5: Showing the comparison of the relationship between EBIT and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Bank name	**Year 2015**	**Year 2016**	**Year 2017**	**Year 2018**	**Year 2019**	**Average**
BK Plc	0.05	0.05	0.05	0.05	0.05	0.05
KCB Ltd	0.02	0.02	0.02	0.02	0.04	0.02
I&M Bank Plc	0.09	0.09	0.09	0.10	0.11	0.10

Source: Secondary data

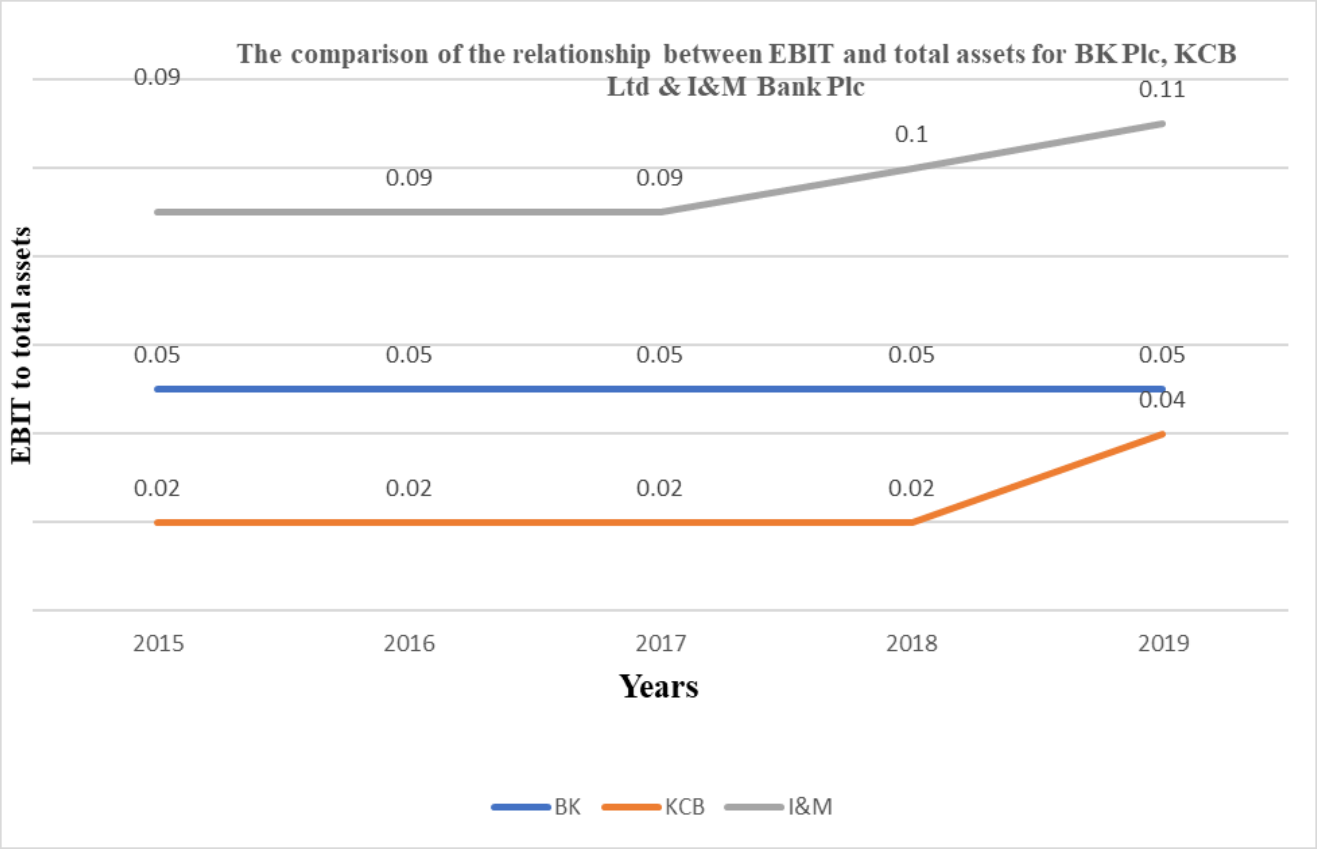

Figure4: Illustrating the comparison of the relationship between EBIT and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Source: Secondary data

Table 6 and figure 4 showed that the EBIT for the 5 years are lower compared to total assets. The Banks are not performing well by comparing the profit (net income) it is generating to the capital it invested in assets.

The ability to generate cash from the bank's operations (António Gomes Mota, 2017) is on average 10%, 5% and 2% for I&M Plc; BK Plc and KCB Ltd respectively for the 5 years under study.

The extent to which the market value of equity and total liabilities affect the financial distress

The ownership or the stockholder's investment in the bank (Cornett, etal, 2012) to total liabilities was used to assess the level at which Bank's assets can decline in value before the liabilities exceed the assets and the bank becomes insolvent. The results are summarized in table 7 below and the overall results summarized in table 8 and figure 5.

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Table 6: Showing relationship between MV of Equity and total liabilities

BK Plc			
Year	**MV of Equity in Frw '000**	**Total liabilities in Frw '000**	**Ratio**
2015	99,245,545	461,980,855	0.21
2016	108,485,600	529,850,998	0.20
2017	122,750,132	604,454,568	0.20
2018	194,705,081	682,696,283	0.29
2019	220,810,886	798,264,700	0.28
KCB Ltd			
Year	**MV of Equity**	**Total liabilities**	**Ratio**
2015	13,425,222	136,217,487	0.10
2016	15,410,385	132,378,715	0.12
2017	17,248,219	140,801,629	0.12
2018	21,135,696	189,977,962	0.11
2019	27,717,017	169,517,397	0.16
I&M Bank Plc			
Year	**MV of Equity in Frw '000**	**Total liabilities**	**Ratio**
2015	24,460,676	148,998,253	0.16
2016	30,423,125	178,312,210	0.17
2017	35,064,526	225,109,666	0.16
2018	39,567,498	254,598,135	0.16
2019	42,786,882	275,112,144	0.16

Source: Secondary data

Table 7: Showing the comparison of the relationship between Market value of equity and total liabilities for BK Plc, KCB Ltd & I&M Bank Plc

Bank name	**Year 2015**	**Year 2016**	**Year 2017**	**Year 2018**	**Year 2019**	**Average**
BK Plc	0.21	0.20	0.20	0.29	0.28	0.24
KCB Ltd	0.10	0.12	0.12	0.11	0.16	0.12
I&M Bank Plc	0.16	0.17	0.16	0.16	0.16	0.16

Source: Secondary data

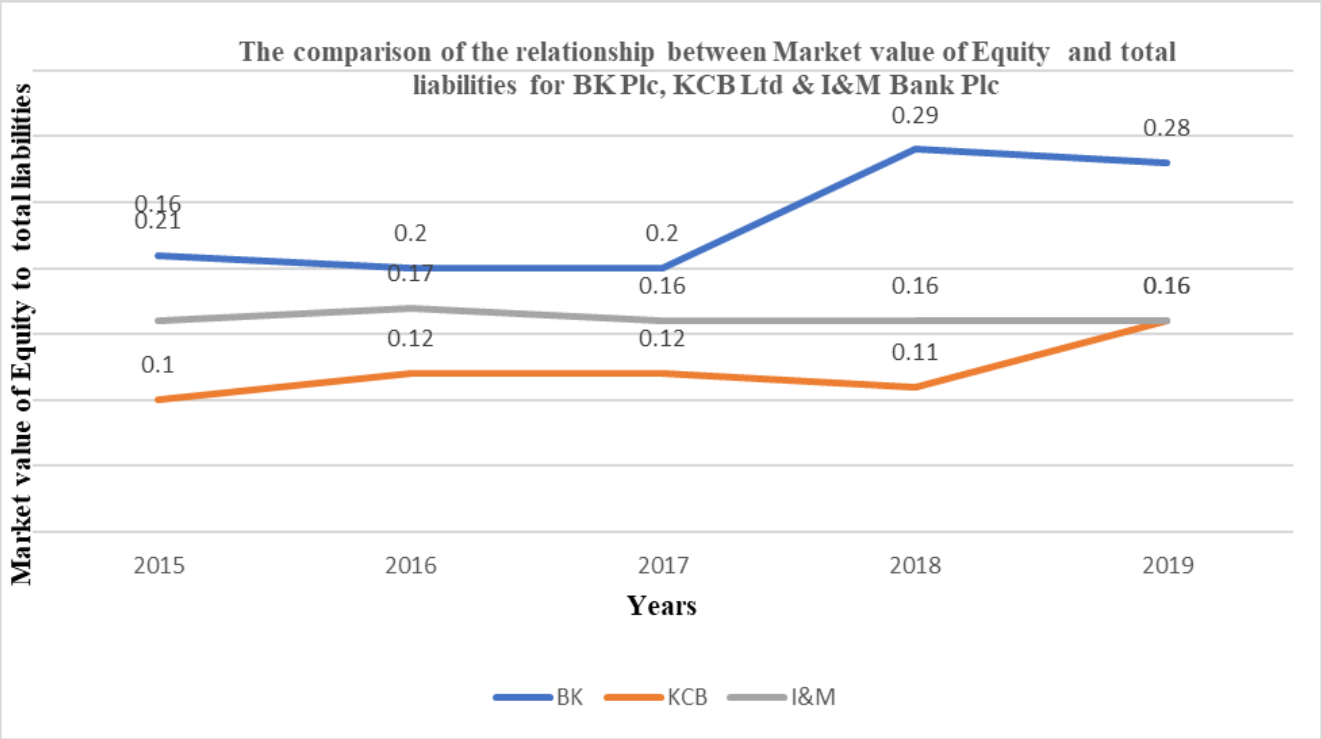

Figure 5: Illustrating the comparison of the relationship between MV of equity and total liabilities for BK Plc, KCB Ltd & I&M Bank Plc
Source: Secondary data

Table 7 and figure 5 showed that the MV of Equity for the 5 years are lower compared to total liabilities. The level at which the Bank's assets can decline in value before the liabilities exceed the assets and the bank becomes insolvent is on average 0.24, 0.16 and 0.12 for BK Plc, I&M Bank Plc and KCB Ltd.

Total assets for BK Plc are internally financed by 24% and externally financed by 76%; 16% internally financed and 84% externally financed for I&M Bank Plc while they are internally financed by 12% and 88% externally financed for KCB Ltd. These Banks were classified by the study as likelihood of bankruptcy high.

How the level of sales to total assets affects the financial distress

The extent to which the assets are being used to maximize the generation of revenues is called asset turnover. The analysis was done to assess the efficiency of Bank's assets in generating revenues.
The results are summarized in table 4.9 below and the overall results summarized in table 9 and figure 6.

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Table 8: Showing the relationship between sales and total assets

BK Plc			
Year	**Sales in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	59,966,855	561,226,400	0.11
2016	72,254,385	638,336,598	0.11
2017	84,707,152	727,204,700	0.12
2018	93,997,805	877,401,364	0.11
2019	115,825,090	1,019,075,586	0.11
KCB Ltd			
Year	**Sales**	**Total assets**	**Ratio**
2015	13,701,617	149,642,709	0.09
2016	15,341,825	147,789,100	0.10
2017	15,894,591	158,049,646	0.10
2018	17,919,038	209,113,658	0.09
2019	21,379,748	197,234,414	0.11
I&M Bank Plc			
Year	**Sales in Frw '000**	**Total assets in Frw '000**	**Ratio**
2015	11,339,746	199,949,490	0.06
2016	13,881,445	233,930,662	0.06
2017	17,564,572	260,174,192	0.07
2018	20,226,290	294,165,633	0.07
2019	21,865,985	317,899,026	0.07

Source: Secondary data

Table 9: Showing the comparison of the relationship between sales and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Bank name/Year	**2015**	**2016**	**2017**	**2018**	**2019**	**Average**
BK Plc	0.11	0.11	0.12	0.11	0.11	0.11
KCB Ltd	0.09	0.09	0.10	0.09	0.11	0.10
I&M Bank Plc	0.06	0.06	0.07	0.07	0.07	0.07

Source: Secondary data

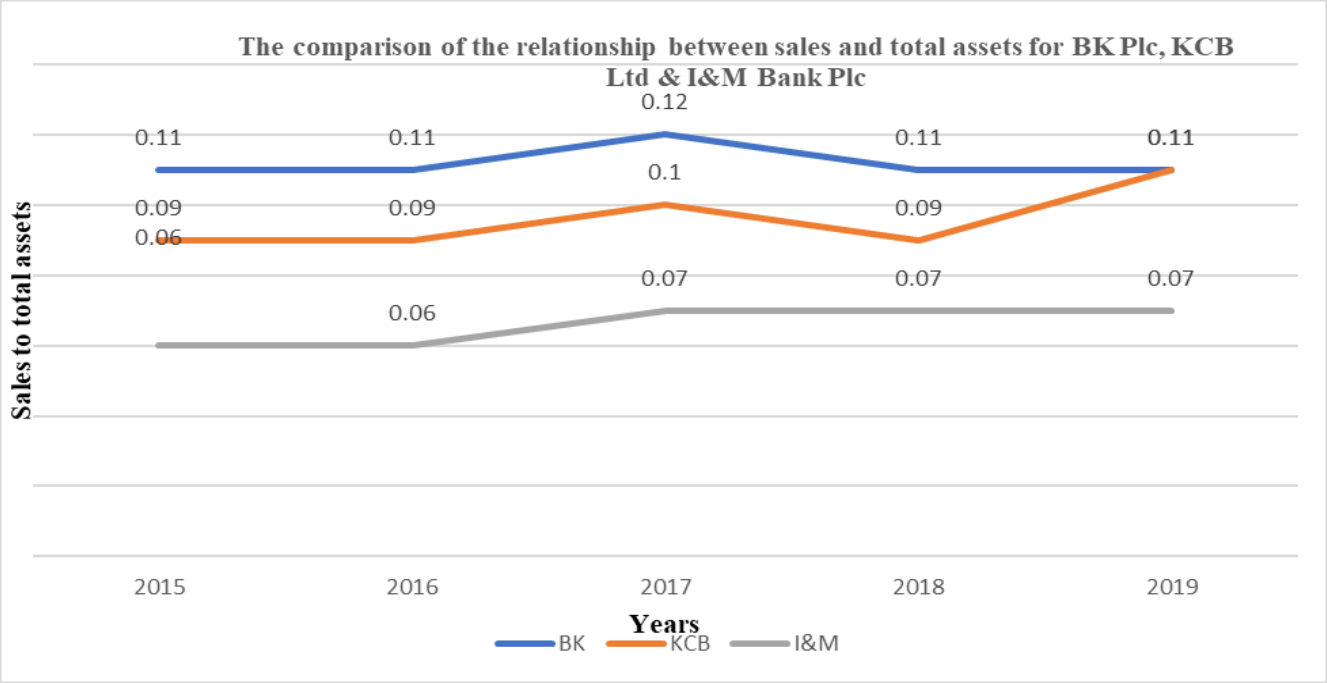

Figure 6: Illustrating the comparison of the relationship between sales and total assets for BK Plc, KCB Ltd & I&M Bank Plc

Source: Secondary data

Table 10 and figure 6 showed that the sales for the 5 years are lower compared to total assets. The efficiency of Bank's assets in generating revenues is on average 0.11 for BK Plc, 0.10 for KCB Ltd and finally 0.07 for I&M Bank Plc.

Asset turnover ratios obtained are the indicators that there is an indicator of bankruptcy because the management of Banks did not effectively manage variable costs and other expenses that were meant to maximise revenues. Cashflow problems are the good indicators that there is a likelihood of Banks to failure.

Altman's Z Score model or Z-Score

The application of Z-Score model revealed that there is a highly likelihood that the bankruptcy will occur because Z-Score is below 1.8 for all 3 Banks under study for five years.

See details in the table 11 and figure 7.

Table 10: Showing Z-Score grading for the 3 Banks under study

Bank name/Year	2015	2016	2017	2018	2019
BK Plc	0.265	0.207	0.405	0.128	0.290
KCB Ltd	0.298	0.342	0.531	0.314	0.491
I&M Bank Plc	0.274	0.303	0.843	0.668	0.548

Source: Secondary data

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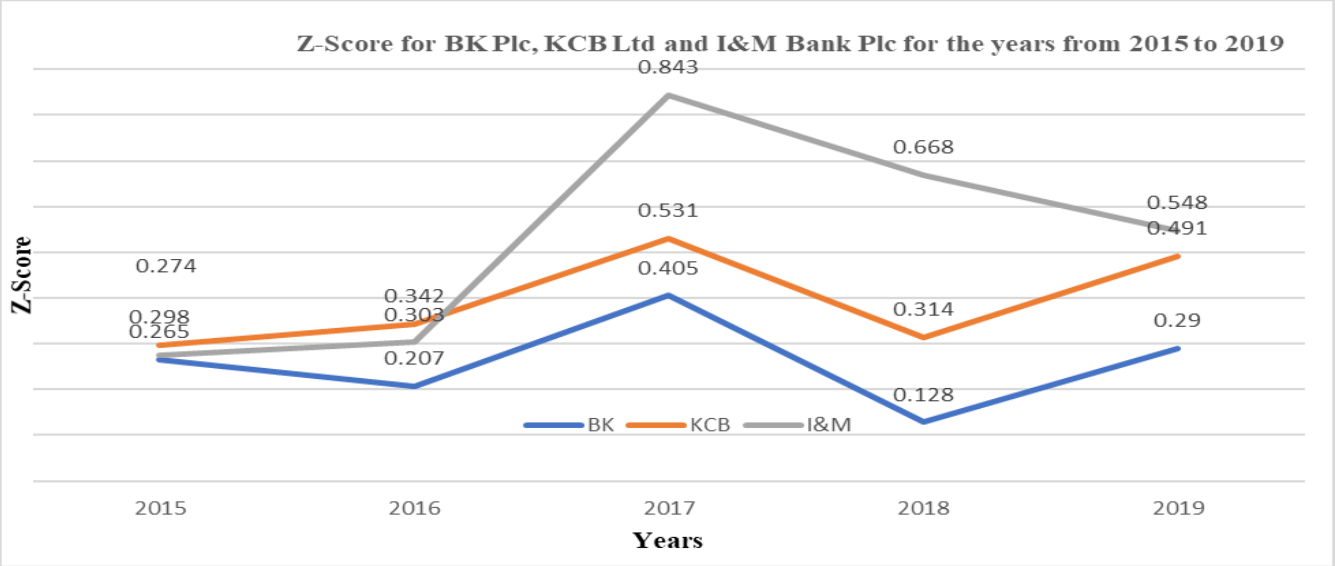

Figure 7: Illustrating Z-Score grading for the 3 Banks under study
Source: Secondary data

CONCLUSIONS AND RECOMMENDATIONS

Banks experienced liquidity gap that hindered their ability to cover their short-term obligations.

BK Plc and I&M Bank Plc experienced a liquidity gap (Table 1 and 2) that were mainly caused by a big amount of customers deposits in relation to assets easily convertible into cash held by Banks. The working capital to assets for KCB Ltd was 0.06 on average and was not sufficient to hit the good indicator while calculating Z-Score (Table .1 & 2).

The analysis of financial statements of BK Plc, KCB Ltd and I&M Bank Plc showed that they relied on debt by funding assets by borrowing instead of through retained earnings which, again, increases the risk of bankruptcy if they cannot meet their debt obligations. According to Altman Predication model, on average the Banks capacity to finance its assets is 11% for BK Plc, 10% for I&M Bank Plc and 2% for KCB Ltd.

BK Plc, I&M bank Plc, according to Altman prediction model, failed to generate revenues from capital invested in assets.

The capacity to generate revenues (António Gomes Mota, 2017), on average, is limited to 10%, 5% and 2% for I&M Bank Plc, BK Plc and KCB Ltd respectively for the 5 years under study.

The extent to which the Bank's assets can decline in value before the liabilities exceed the assets and the bank becomes insolvent is on average 0.24, 0.16 and 0.12 for BK Plc, I&M Plc and KCB Ltd.

Total assets for BK Plc were internally financed by 24%, 16% internally financed for I&M Bank Plc while they are internally financed by 12% for KCB Ltd. These Banks were classified by the study as likelihood of bankruptcy high.

The efficiency of Bank's assets in generating revenues is on average 0.11 for BK Plc, 0.10 for KCB Ltd and finally 0.07 for I&M Bank Plc.

Asset turnover ratios obtained are the indicators that there is an indicator of bankruptcy because the management of Banks did not effectively manage variable costs and other expenses that were meant to maximise revenues. Cashflow problems are the good indicators that there is a likelihood of Banks to failure.

The analysis revealed that BK Plc, KCB Ltd and I &M Bank Plc financial health has indicators of likelihood of bankruptcy mainly because of inappropriate working capital management, failure to fund assets using retained earnings, ineffective performance resulting into low operating profits and failure to maximize the use of assets to generate sufficient sales.

Rwanda Vision 2050 targets the Banking Sector as the main contributor self-reliance and economic independence. This measure of financial distress is not used in commercial banks while it provides analysis on how the day to day operations of the Bank affects its financial health.

Banks should take a step and add Z- Score to the task to be performed by management accountant.

Findings from this study will help corporate managers of different Banks to set up measure that will help them to better perform and set appropriate reporting system in regard to factors affecting financial distress of commercial Banks. So, they should use the stated findings.

The financial sector regulator should evaluate the current reporting requirements and inquire Commercial banks to adjust the way management accountant report are produced.

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