

PREDICTING CORPORATE FAILURE INSIGHTS FROM THE FINANCIAL SECTOR IN ZIMBABWE

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Abstract

The collapse of the some of the financial institutions indicates a need for Zimbabwe to utilise and even develop a reliable model which accurately predicts corporate health within companies. This study examines corporate failure prediction in a developing country in Southern Africa using Altman's Z-score model. A sample of financial institutions listed on the Zimbabwe Stock Exchange is tested for the Z-score to predict possible failure or bankruptcy within the financial sector in Zimbabwe. Using financial data from the years 2011 to 2013 the study concludes that 83.33% of listed financial sector firms are under distress, 16.67% are under the grey area and no financial sector institution is in the safe zone. This study adds to the discourse on the stability of the financial sector in Zimbabwe, and seeks to assist the general public and investors on the financial health of institutions in the financial sector in Zimbabwe.

Keywords: Z-score, corporate failure, financial institutions, financial health, bankruptcy

INTRODUCTION

The genealogy of the Zimbabwean banking crisis can be traced back to 2004 when the Reserve Bank of Zimbabwe (RBZ) placed nine financial institutions under curatorship, these are Barbican Bank Limited; CFX Bank Limited; CFX Merchant Bank; Intermarket Banking Corporation Limited; Intermarket Building Society; Intermarket Discount House; Royal Bank; Time Bank and Trust Bank and during the same year Barbicairn Asset Management, Century Discount House and Rapid Discount House were placed under liquidation (RBZ, 2006). This resulted in depositors losing their investments in these institutions and therefore eroding the public confidence on the banking sector, and has resulted in a lot of citizens being unbanked.

Consequently after this crisis, most banks regularised their operations but in 2012, Interfin Bank was put under curatorship and Genesis Investment Bank was closed by the RBZ due to failure to meet new capital requirements (RBZ, 2012).

The crisis is far from over as most banks are failing to meet the minimum capital requirements set by the Reserve Bank of Zimbabwe in 2012. As at September 2013, seven banks were being monitored by the Reserve Bank, these are Allied, Agribank, Capital Bank, Kingdom, Tetrad, Trust and ZB Building Society (RBZ, 2013). In 2013, the central bank cancelled Trust Bank's banking licence over allegations of abuse of depositors' funds and violation of the Banking Act, and in June 2014 Capital Bank was closed.

The troubled banks are currently facing liquidity challenges and hence failure to meet depositors' requirements for withdrawals and other cash related transactions.

All this has resulted in the depositors and shareholders rising questions on how the collapse of banks can be detected so as to protect depositors funds and to reduce the effects of a bank collapsing on the economy.

The collapse of these financial institutions indeed indicates the need for Zimbabwe to utilise and even develop a reliable model which accurately predicts corporate health within companies. The purpose of this study was to predict the collapse of financial institutions in Zimbabwe so as to assist in early detection of a looming collapse, and for remedies to be undertaken, so as to booster public confidence in the financial sector.

The global financial crisis has also resulted in concerns being raised about the going concern status of major huge global companies. This has renewed the debate among concerned stakeholders to identify companies with bankruptcy alerts (Gerald, 2002).

LITERATURE REVIEW

According to the Association of Certified Chartered Accountants (ACCA, 2008) corporate failure models can be divided into two categories, these are the quantitative models and the qualitative models as discussed below:

Quantitative Models

Argenti (2003) indicates that quantitative models identify financial ratios with values which differ markedly between surviving and failing companies, and which can subsequently be used to identify companies which exhibit the features of previously failing firms. These fall under the Univariate Analysis and Multiple Discriminate Analysis (MDA).

Univariate Analysis

Patrick (1932) is assumed to be the earlier author who used ratio analysis to predict corporate failure; this was then followed by studies done by William Beaver. In 1966, he pioneered the use of corporate failure prediction models and applied the Univariate model to separate each ratio (ACCA, 2008).

Beaver selected a sample of 79 failed firms and 79 non-failing firms and investigated the predictive power of 30 ratios when applied five years prior to failure. This work systematically categorised 30 popular ratios into six groups, and found that some ratios, such as cash flow/total debt ratio, demonstrated excellent predictive power in corporate failure models. Although this was a useful beginning, Univariate analysis was later found to be limited and better results were obtained from including a number of ratios that combined to give a more robust model with improved predictive power (ACCA, 2008).

Multiple Discriminate Analysis

Altman's Z-score

Following Beaver, Altman (1968) proposed 'multiple discriminant analysis' (MDA). This technique dominated the literature on corporate failure models until the 1980s and is commonly used as the baseline for comparative studies (ACCA, 2008).

In the MDA model, the ratios are combined into a single discriminant score, termed a 'Z-score', with a low score usually indicating poor financial health. The initial sample was composed of 66 publicly listed manufacturing companies in the United States of America (USA) between the periods 1946-1965. Altman classified the companies into two mutually exclusive groups, bankrupt and non-bankrupt. Failed and non-failed companies were matched by size and industry and selected on stratified random basis. The discriminant function was developed using 33 firms in each group as estimation sample, He related 22 accounting and non-accounting ratios which experiment resulted in a single cut-off point of 5 financial ratios that were statistically momentous in predicting liquidation from zero to two years before the actual event occurred. Altman's original Z-score equation was:

$$Z=0.012X1+0.014X2+0.33X3+0.006X4+0.999X5$$

Where:

X1= working capital/total assets

X2= retained earnings/total assets

X3= profit before interest and tax/total assets

X4= market value of equity/book value of total liabilities

X5= sales/total assets

With the following zones of discrimination:

$Z > 2.67$ 'safe' zone

$1.81 < Z < 2.67$ 'grey' area

$Z < 1.81$ 'distress' zone

Working capital encompasses the liquidity of the company and this is calculated by the difference between current assets and current liabilities. A negative working capital shows that a firm might be facing challenges in paying short term obligations.

The X2 ratio measures the earning power of the company. Low retained earnings may indicate that the firm is not profitable.

The X3 ratio indicates the funds available to clear interest and tax creditors, taxation and to pay dividends out.

With reference to the X4 ratio, this relates to the market capitalisation, this shows the firms worth, and when its expressed as a ration to total liabilities, the ratio indicates whether the firm is under financial distress or not.

The original formula was modified by Altman and LaFleur (1981) to accommodate the private sector. The new formula was as below:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

In its initial test, the Altman Z-score was found to be 72% accurate in predicting bankruptcy two years prior to the event, with a type II error of 6%. In a series of subsequent tests covering three different periods up to 1999, the model was found to be approximately 80-90% accurate in predicting bankruptcy one year prior to the event, with a type II error of approximately 15-20% (Altman, 1968).

The formula has been used in different context and countries, although it was designed originally for listed manufacturing companies with assets over more than \$1 million, later variations by Altman were designed to be applicable to privately held companies (the Altman Z'-Score) and non-manufacturing companies (the Altman Z''-Score) ACCA (2008).

The Z''-score estimated for non-manufacturing companies is as follows:

$$Z'' = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

With the following zones of discrimination

$Z > 2.6$ 'safe' zone

$1.1 < Z < 2.6$ 'grey area'

$Z < 1.1$ 'distress' zone

Springate

According to ACCA (2008) the Springate model was developed by Gordon Springate following the procedure used by Altman. Springate selected four out of 19 popular financial ratios using step wise multiple discriminate analysis. The selected ratios distinguished between sound business and those that actually failed.

The Springate model was used to test 40 companies and achieved an accuracy rate of 92.5%. Botheras (2000) tested the Springate model on 50 companies with an average asset size of \$2.5million and found an 88% accuracy rate. The model was also used by Sands (2001) to test 24 companies with an average asset size of \$63.4million and found an accuracy rate of 83.3%.

The Springate model takes the following form:

$$Z=1.03A+3.07B+0.66C+0.4D$$

Where: A= Working capital/Total Assets

B=Profit before Interest and Tax/Total Assets

C=Profit before taxes/current liabilities

D=Sales/Total Assets

Ca-score Model

This model was developed using step-wise multiple discriminate analysis. In this model thirty financial ratios were analysed in a sample of 173 manufacturing industries in Canada having annual sales of approximately \$1,20million. This model has an average reliability rate of 83% and is restricted to evaluating manufacturing companies (Bilanas, 2004).

Qualitative Models

This category of model rests on the premise that the use of financial measures as sole indicators of organisational performance is limited. Qualitative models are based on non-accounting or qualitative variables. One of the most notable of these is the A score model attributable to Argenti (2003), which suggest that the failure process follows predictable sequence:

Defects → Mistakes Made → Symptoms of failure

Defects can be divided into management weaknesses and accounting deficiencies these include autocratic CEO; passive board of directors; weak finance director; poor response to change and accounting deficiencies include no budgetary control, no cash flow plans and no costing system.

Each weakness is given a mark or given zero if the problem is not present. The total mark for defects is 45, and Argenti suggests that a mark of 10 or less is satisfactory.

If a company's management is weak, the Argenti suggests that it will inevitably make mistakes which may not become evident in the form of symptoms for a long period of time. The failure sequence is assumed to take many years, possibly five or more.

The final stage of the process occurs when the symptoms of failure become visible. Argenti classifies such symptoms of failure using the following categories

1. Financial signs-in the A score context, these appear only towards the end of the failure process, in the last two years
2. Creative accounting
3. Non-financial signs e.g. frozen management salaries, delayed capital expenditure, falling market share, rising staff turnover
4. Terminal signs

The overall pass mark is 25. Companies scoring above this show many of the signs preceding failure and should therefore cause concern. The A score has therefore attempted to quantify the causes and symptoms associated with failure. Its predictive value has not been adequately tested, but a misclassification rate of 5% has been suggested.

In this study the Quantitative Model of predicting the financial health of the financial institutions was used, following Altman's Multiple Discriminate due to the fact that previous studies, namely by Altman(1993),the MDA was found to be 80-90% accurate in predicting corporate failure.

Country studies

Various case studies in different countries have been conducted and using different models. Most of the case studies have been conducted in the developed world. This study focused on a developing African country.

Wang and Campbell (2010) studied data from Chinese publicly listed companies for the period 2000 to 2008 to test the accuracy of Altman's Z-score model in predicting failure of Chinese companies. All Altman's models were found to have significant predictive ability. This study indicates that the Z-score model is a helpful tool in predicting failure of a publicly listed firm in China.

Yim and Mitchel (2005) noted that a number of studies using discriminant analysis have been carried out in Brazil. They reviewed empirically those notable studies these are: Elizabetsky (1976) analysed 99 Brazilian firms that failed and 274 non-failed firms. The best model correctly classified 63% of the failed firms and 74% of the non-failed firms.

Siqueira and Matias (1996) applied the logit model to a sample of 16 Brazilian banks that failed during 1994-1995 and 20 non-failed banks. The best model correctly classified 87% of the failed banks and 95% of the non-failed banks.

Castagna and Matolcsy (1986) applied linear and quadratic discriminant models to a sample that consisted of 21 failed firms matched to 21 non-failed firms over a period 1963-1977 in Australia. The results one year before failure show that the model correctly classified 81% of the failed firms and classified correctly non-failed firms by 95%.

With regards to African countries, various studies have been conducted in Nigeria, Kenya, South Africa and Ghana. Unegbu and Onojah (2013) did a study that focused on the empirical investigation of the effectiveness of Z-score corporate insolvency prediction model on selected industrial sectors of a developing economy, specifically in Nigeria. The research covered a ten year period from 2001 to 2010. The outcome of the research shows that Z-score is a significant effective tool for predicting corporate failures in emerging economies.

A study by Ani and Ugwunta (2012) focused on predicting corporate business failure in the Nigerian manufacturing sector. The sample consisted of eleven Nigerian firms and utilised financial information for the period from the year 2000 to 2004. A multi discriminant analysis model was used in predicting and detecting failing businesses in the manufacturing sector of the Nigerian economy. The results revealed that MDA is a veritable tool for assessing the financial health of firms in Nigeria. It was also noted that MDA not only predicts business failure but revealed most importantly that the warning signs of impending failure can be revealed one to two years before the actual failure.

Appiah (2011) did a study on corporate failure prediction on listed firms in Ghana. The study examined the phenomenon of bankruptcy prediction from a developing economy perspective using the Altman's Z-score model. A sample of 15 non-failed and failed companies listed on the Ghana Stock Exchange, the author tested Altman (1968) model via a cross section of different firms with dataset with 2004 and 2005. The findings from the study are that Altman's Z-score is applicable in predicting bankruptcy in Ghana depending on the nature and size of the company.

According to Boritz et. al (2007) a variety of models have been developed in the academic literature using techniques such as MDA, logit, probit, recurvise portioning, hazard models, and neural networks. Despite the variety of models available, both the business community and researchers often rely on the models developed by Altman (1968) and Ohlson (1980). A survey of literature shows that the majority of international failure prediction studies employ MDA (Altman, 1984; Charitou, Neophytou & Charalambous, 2004).

Numerous studies have documented evidence of the effectiveness of Altman's Z-score in predicting corporate financial distress for example (Wang and Campbell 2010, Lugovskaya, 2010, Gerantonis et.al 2009, Xu and Zhang 2009).

Gerantonis et al (2009) checked whether Z-score Altman model can predict correctly company failures. They found that Altman model performs well in predicting failure. Similarly Arrawi, et al (2008) used Altman Z-score and ratio analysis approaches to conclude their views why firms under study went bankrupt. They concluded that Altman's model may be used as an indicator and perhaps evidence to determine the forms bankruptcy in the future.

There is also evidence that a hybrid approach, which combines a market-based model and an accounting based model i.e. Altman's provides better bankruptcy prediction than either model alone (Li & Miu 2010). This is consistent with the findings of Das (2009) that a model incorporates both accounting-based information and market based information out performs either model. A hybrid model appears to be also useful in predicting the bankruptcy of Japanese listed companies (Xu and Zhang 2009).

In light of the evidence presented above on the predictive nature of Altman's model this study seeks to therefore utilise Altman's Z-score model for non-manufacturing firms, specifically publicly listed financial firms on the Zimbabwe Stock Exchange, to predict failure and non-failure firms utilising data for the period 2011 to 2013.

METHODOLOGY

The purpose of the study was to predict corporate failure within the banking and financial sector in Zimbabwe, using Altman's Z-score model for predicting corporate failure in non-manufacturing companies.

Most of the studies on the African continent are based on whether Altman's model is predictive of corporate failure. The approach in this study is to use Altman's model to predict the failure of financial institutions.

The data for this analysis was gathered from a sample of six listed companies in the banking and financial services. As at 30 June 2014, the RBZ reported that Zimbabwe has 20 banking institutions. The sample therefore is representative at 30%. The sample size was based on a non probabilistic sampling technique due to the availability of data only from the listed counters, thereby leaving out banks which are not listed on the Zimbabwean Stock Exchange. The study focused on the period from 2011 to 2013, due to the fact that Zimbabwe started fully reporting using the foreign currency, mainly the United States Dollar(USD) in 2010, and more bank closures were witnessed between 2011 and early 2014. The research focused on the four variables for Z-score for non-manufacturing companies.

Financial ratios were computed with regards to each company and for each year, these ratios covered liquidity ratios, profitability ratios, operating efficiency and market related fluctuations on security prices. Statistical weights were given to the various ratios in the order of importance as follows: 6.56, for X1; 3.26 for X2; 6.72 for X3; and 1.05 for X4 within the model. The Z-score was then computed for each company and for each year to indicate the financial health of each company and an analysis undertaken for each company for the period 2011 to 2013. One of the listed companies BancABC has its primary listing on the Botswana Stock Exchange has the financial results are presented in the Botswana Pula (BWP)

ANALYSIS & RESULTS

Analysis of accounting ratios and z-scores for 2011

Working capital/Total Assets for 2011

This ratio measures the liquidity of the financial institutions. The ratio of working capital to total assets was calculated for the banks and Table 1 below summaries the findings:

Table 1 Working capital to total assets: 2011

BANK	Current Assets	Current Liabilities	Working Capital	Total Assets	X1
	BWP	BWP	-BWP	BWP	
BANCABC	5,497,924,000.00	7,299,383,000.00	1,801,459,000.00	9,183,888,000.00	- 0.20
		USD	-USD		
BARCLAYS	USD 219,364,687.00	224,472,649.00	5,107,962.00	USD 260,035,404.00	- 0.02
		USD	-USD	USD	
CBZ	USD 700,076,258.00	830,404,352.00	130,328,094.00	1,055,697,496.00	- 0.12
		USD	USD		
FBC	USD 221,280,754.00	198,012,784.00	23,267,970.00	USD 279,592,710.00	0.08
		USD	USD		
NMB	USD 157,074,656.00	143,915,752.00	13,158,904.00	USD 167,287,333.00	0.08
		USD	-USD		
ZB	USD 182,022,960.00	213,314,319.00	31,291,359.00	USD 272,579,415.00	- 0.11

For the computation of X1 the working capital for each financial institution is calculated as current assets less the current liabilities. From Table 1 only FBC and NMB have positive working capitals hence a positive ratio of Working Capital to Total Assets, indicating their ability to meet short term obligations. The other banks have negative working capitals therefore resulting in negative ratios (X1.). 66.67% of the financial institutions have negative working

capital meaning that they are not able to meet their short term obligations, and 33.33% of the financial institutions have working capital to meet their short term obligations.

Retained Earnings to Total Assets for 2011

The Table 2 below show the computation of the ratio of retained earnings to total assets calculated for each of the six banks:

Table 2 Retained Earnings/Total Assets 2011

BANK	Retained Earnings	Total Assets	X2
BANCABC	BWP 182,593,000.00	BWP 9,183,888,000.00	0.02
BARCLAYS	USD 1,730,778.00	USD 260,035,404.00	0.01
CBZ	USD 57,565,187.00	USD 1,055,697,496.00	0.05
FBC	USD 13,106,111.00	USD 279,592,710.00	0.05
NMB	USD 6,486,333.00	USD 167,287,333.00	0.04
ZB	USD 1,705,652.00	USD 272,579,415.00	0.01

X2= Retained Earnings/Total Assets

From Table 2 above all the financial institutions have positive X2 with the highest being 0.05 for CBZ and FBC.100% of the firms are profitable in terms of their capacity to retain part of their earnings, which can be transferred to reserves when the need arises.

Profit before Interest and Tax/Total Assets

The ratio calculated as X3 indicates the cash supply available to pay interest and tax obligations and also dividends to shareholders. Table 3 below shows the results for the ratio of profit before interest and tax/total assets.

Table 3 Profit before interest and tax/total assets

BANK	PBIT	Total Assets	X3
BANCABC	BWP 107,684,000.00	BWP 9,183,888,000.00	0.01
BARCLAYS	USD 2,118,100.00	USD 260,035,404.00	0.01
CBZ	USD 38,206,193.00	USD 1,055,697,496.00	0.04
FBC	USD 15,674,998.00	USD 279,592,710.00	0.06
NMB	USD 6,193,653.00	USD 167,287,333.00	0.04
ZB	USD 8,968,877.00	USD 272,579,415.00	0.03

X3=Profit before interest and tax/total assets

100% of the sampled firms earned a profit in 2011 indicative that the firms may be able to pay their corporate tax obligations, interest payable and shareholder's dividends.

Market Value of Equity/Total liabilities

The ratio X4 is a more accurate ratio used to predict financial distress in listed companies. Table 4 below shows the results of the ratio market value of equity/ total liabilities for 2011.

Table 4 Market value of equity/total liabilities

BANK	Market Value of Equity	Total Liabilities	X4
BANCABC	BWP 139,422,000.00	BWP 8,571,321,000.00	0.02
BARCLAYS	USD 92,622,000.00	USD 226,524,538.00	0.41
CBZ	USD 87,580,059.14	USD 936,448,154.00	0.09
FBC	USD 38,397,976.89	USD 205,373,878.00	0.19
NMB	USD 322,817,338.24	USD 143,915,752.00	2.24
ZB	USD 32,561,975.40	USD 218,123,193.00	0.15

$X4 = \text{market value of equity} / \text{total liabilities}$

The Z-scores for 2011

Table 5 shows the calculated Z-scores for the year 2011 for the six financial institutions:

Table 5: Z-scores 2011

BANK	X1	X2	X3	X4	Z-Score
BANCABC	- 0.20	0.02	0.01	0.02	- 1.13
BARCLAYS	- 0.02	0.01	0.01	0.41	0.38
CBZ	- 0.12	0.05	0.04	0.09	- 0.29
FBC	0.08	0.05	0.06	0.19	1.27
NMB	0.08	0.04	0.04	2.24	3.25
ZB	- 0.11	0.01	0.03	0.15	- 0.35

The calculations for the z-score in 2011 indicate that only one of the financial institutions is in the safe zone that is NMB, representing 16.67% whilst FBC is the only one in the grey zone, representing 16.67% of the firms and BANCABC, Barclays and ZB are all in the distress zone, representing 66.66%.

Analysis of accounting ratios and Z-scores for 2012

Working Capital/Total Assets

The Table below shows the computation of X1, which is the ratio of working capital/total assets.

Table 6 Working capital/Total assets

BANK	Current Assets	Current Liabilities	Working Capital	Total Assets	X1
	BWP	BWP	BWP	BWP	
BANCABC	12,598,581,000.00	11,886,283,000.00	712,298,000.00	13,407,765,000.00	0.05
	USD	USD	USD	USD	
BARCLAYS	239,635,145.00	237,339,310.00	2,295,835.00	281,526,923.00	0.01
	USD	USD	USD	USD	
CBZ	1,077,497,829.00	1,062,415,992.00	15,081,837.00	1,223,093,227.00	0.01
	USD	USD	USD	USD	
FBC	333,261,349.00	299,785,379.00	33,475,970.00	392,054,851.00	0.09
	USD	USD	USD	USD	
NMB	214,205,004.00	178,967,766.00	35,237,238.00	226,533,682.00	0.16
	USD	USD	-USD	USD	-
ZB	254,509,032.00	255,986,151.00	1,477,119.00	326,729,967.00	0.00

With regards to 2012, working capital, only 16.67% of the financial institutions have a negative working capital indicating that the firm may not be liquid enough to meet its short term financial obligations. 83.33% of the financial institutions have a healthy working capital position.

Retained Earnings/Total Assets

Table 7 shows the results for the ratio of retained earnings/total assets. It indicates that 100% of the financial institutions are profitable.

Table 7 Retained Earnings/Total Assets

BANK	Retained Earnings	Total Assets	X2
BANCABC	BWP 337,691,000.00	BWP 13,407,765,000.00	0.03
BARCLAYS	USD 3,517,975.00	USD 281,526,923.00	0.01
CBZ	USD 100,943,928.00	USD 1,223,093,227.00	0.08
FBC	USD 24,738,249.00	USD 392,054,851.00	0.06
NMB	USD 12,778,583.00	USD 226,533,682.00	0.06
ZB	USD 6,573,057.00	USD 326,729,967.00	0.02

X2= retained earnings/total assets

Profit before interest and tax/total assets

Table 8 below shows the results calculated from the ratio of profit before interest and tax/total assets. It indicates that 100% of the financial institutions are in a financial position to be able to pay creditors and shareholders, including statutory obligations.

Table 8 Profit before interest and tax/Total assets

BANK	PBIT	Total Assets	X3
BANCABC	BWP 212,273,000.00	BWP 13,407,765,000.00	0.02
BARCLAYS	USD 3,052,563.00	USD 281,526,923.00	0.01
CBZ	USD 55,555,622.00	USD 1,223,093,227.00	0.05
FBC	USD 16,892,650.00	USD 392,054,851.00	0.04
NMB	USD 10,002,224.00	USD 226,533,682.00	0.04
ZB	USD 8,919,339.00	USD 326,729,967.00	0.03

X3=Profit before interest and tax/total assets

Market Value of Equity/Total Liabilities

Table 9 below shows the computations for the ratio of market value of equity/total liabilities.

Table 9 Market value of equity/total liabilities

BANK	MVE	TOTAL LIABILITIES	X4
BANCABC	BWP 128,043,005.20	BWP 12,251,681,000.00	0.01
BARCLAYS	USD 55,978,000.00	USD 240,998,310.00	0.23
CBZ	USD 68,414,454.60	USD 1,062,415,992.00	0.06
FBC	USD 44,388,759.53	USD 303,902,218.00	0.15
NMB	USD 183,160,260.27	USD 195,591,599.00	0.94
ZB	USD 14,015,251.36	USD 261,203,812.00	0.05

X4=market value of equity/total liabilities

Z-scores for 2012

The following data relates to the calculated Z-scores for the six banks for 2012.

Table 10: 2012 Z-scores

BANK	X1	X2	X3	X4	Z-Score
BANCABC	0.05	0.03	0.02	0.01	0.55
BARCLAYS	0.01	0.01	0.01	0.23	0.41
CBZ	0.01	0.08	0.05	0.06	0.72
FBC	0.09	0.06	0.04	0.15	1.21
NMB	0.16	0.06	0.04	0.94	2.48
ZB	- 0.00	0.02	0.03	0.05	0.28

The Z-scores for 2012 indicate that no bank is in the safe zone, with NMB and FBC in the grey area (33.33%) and all the other banks are in the distress zone (66.67%).

Analysis of accounting ratios and Z-scores for the year 2013

Working Capital/Total Assets

The table below shows the results for the ratio of working capital to total assets. Table 11 indicates that 33.33% of the financial institutions have a negative working capital, therefore very low X1 ratio, and 66.67% of the firms are able to meet their working capital requirements.

Table 11 Working capital/Total assets

BANK	Current Assets	Current Liabilities	Working Capital	Total Assets	X1
	BWP	BWP	BWP	BWP	
BANCABC	1,683,876,000.00	1,431,331,000.00	252,545,000.00	1,799,337,000.00	0.14
	USD	USD	USD	USD	
BARCLAYS	266,350,327.00	258,453,719.00	7,896,608.00	307,806,497.00	0.03
	USD	USD	USD	USD	
CBZ	1,446,971,331.00	1,242,288,486.00	204,682,845.00	1,558,667,011.00	0.13
	USD	USD	-USD	USD	
FBC	261,596,175.00	345,347,859.00	83,751,684.00	460,778,310.00	- 0.18
	USD	USD	USD	USD	
NMB	243,421,202.00	198,426,446.00	44,994,756.00	259,483,112.00	0.17
	USD	USD	-USD	USD	
ZB	248,112,191.00	255,148,134.00	7,035,943.00	332,030,902.00	- 0.02

Retained Earnings/Total Assets

Table 12 below shows the results for the ratio retained earnings/total assets. The table indicates that 100% of the firms are profitable.

Table 12 Retained earnings/total assets

BANK	Retained Earnings	Total Assets	X2
BANCABC	BWP 32,228,000.00	BWP 1,799,337,000.00	0.02
BARCLAYS	USD 6,862,523.00	USD 307,806,497.00	0.02
CBZ	USD 36,652,342.00	USD 1,558,667,011.00	0.02
FBC	USD 37,575,558.00	USD 460,778,310.00	0.08
NMB	USD 9,604,191.00	USD 259,483,112.00	0.04
ZB	USD 11,814,783.00	USD 332,030,902.00	0.04

X2= retained earnings/total assets

Profit before interest and tax/Total assets

The Table 13 below shows the results of the ratio profit before interest and tax/Total assets.

Table 13 Profit before interest and tax/total assets

BANK	PBIT	Total Assets	X3
BANCABC	BWP 30,022,000.00	BWP 1,799,337,000.00	0.02
BARCLAYS	USD 5,184,146.00	USD 307,806,497.00	0.02
CBZ	USD 42,222,985.00	USD 1,558,667,011.00	0.03
FBC	USD 16,220,524.00	USD 460,778,310.00	0.04
NMB	-USD 3,951,865.00	USD 259,483,112.00	-0.02
ZB	USD 1,069,983.00	USD 332,030,902.00	0.00
<i>X3=Profit before interest and tax/total assets</i>			

Table 13 shows that 16.67% of the financial institutions are not able to meet their regulatory obligations and shareholders payments, whilst 83.33% of the firms are in a healthy position to pay regulatory creditors and government liabilities.

Market value of equity/Total Liabilities

The table below shows the results for the ratio of market value of equity to total liabilities.

Table 14 Market Value of Equity/Total liabilities

BANK	MVE	TOTAL LIABILITIES	X4
BANCABC	BWP 144,377,466.00	BWP 1,634,304,000.00	0.09
BARCLAYS	USD 75,790,534.00	USD 263,465,446.00	0.29
CBZ	USD 102,721,588.00	USD 1,352,819,939.00	0.08
FBC	USD 77,274,242.00	USD 354,562,794.00	0.22
NMB	USD 15,377,094.00	USD 216,041,709.00	0.07
ZB	USD 10,511,439.00	USD 264,739,152.00	0.04
<i>X4=market value of equity/total liabilities</i>			

Z-scores for 2013

Table 15 below shows the calculated Z-scores for the six banks for the year 2013.

Table 15 Z-scores 2013

BANK	X1	X2	X3	X4	Z-Score
BANCABC	0.14	0.02	0.02	0.09	1.18
BARCLAYS	0.03	0.02	0.02	0.29	0.66
CBZ	0.13	0.02	0.03	0.08	1.20
FBC	-0.18	0.08	0.04	0.22	- 0.46
NMB	0.17	0.04	- 0.02	0.07	1.23
ZB	-0.02	0.04	0.00	0.04	0.04

The results above indicate that no bank is in the safe zone. The NMB, BancABC and CBZ are in the grey area (indicating 50%) and the other remaining three banks are under distress, indicating a 50% of the sample.

Average Z-scores for the period 2011 to 2013

The table below summaries the average Z-scores for the three- year period (2011-2013), under review.

Table 16 Average Z-scores

BANK	2011	2012	2013	Average
BANCABC	- 1.13	0.55	1.18	0.20
BARCLAYS	0.38	0.41	0.66	0.48
CBZ	- 0.29	0.72	1.20	0.54
FBC	1.27	1.21	- 0.46	0.67
NMB	3.25	2.48	1.23	2.32
ZB	- 0.35	0.28	0.04	-0.01

The average Z-scores for the three year period under study indicate that no bank is under the safe zone, with only one financial institution in the grey area. The remaining five financial institutions are under distress.

From this sample we can deduce that only 16.67% of the financial institutions under study are in the grey area, the majority of 83.33% are under distress.

CONCLUSION

This study was based on Altman's Z-score for non-manufacturing firms, and financial institutions listed on the Zimbabwe Stock Exchange were under study. The data was based on the financial reports for the period 2011 to 2013. The findings showed that on average most of the firms in the financial sector are under distress i.e. 83.33%, whilst only 16.67% of the firms are in the grey zone. No financial sector firm is in the safe zone. The current study by way of recommendation to the financial sector players, recommends the use of Altman's Z-score model in predicting corporate failure in the financial services and banking sector in Zimbabwe.

The current study contributes to the field of accounting and finance, with special emphasis on a country that is recovering economically, and a developing country from Southern Africa. The study is limited only to the six financial institutions listed on the Zimbabwean Stock exchange, thereby leaving out institutions not listed on the local bourse. The other limitation of the study is that the financial sector in Zimbabwe is made up of other entities like the insurance sector and the micro finance institutions which this study did not investigate, and again the study was only limited to the listed entities of the Zimbabwe Stock Exchange. The study also focused on only one method of predicting corporate failure, which was quantitative leaving out the other qualitative methods that could assist in corporate failure prediction.

Areas that need further research, include testing the failure prediction model on other financial institutions that are not listed on the Zimbabwean Stock Exchange, this includes enlarging the sample of financial institutions. Another area for further research will be to utilise data from a failed company to determine whether the failure prediction model would have assisted in identifying that the failed company was going down. Other models may also be tested i.e. the Springate Model, Ca Score Model and qualitative models like the A score by Argenti.

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