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## EFFECT OF CORPORATE GOVERNANCE ON BANKRUPTCY RISK OF DEPOSIT MONEY BANKS IN NIGERIA

**Okoye Nwamaka J.**

Department of Entrepreneurship  
Nnamdi Azikiwe University, Awka  
Mail: [janefrancesmakie@gmail.com](mailto:janefrancesmakie@gmail.com)

**Okoye Pius V.C.**

Department of Accountancy  
Nnamdi Azikiwe University, Awka  
Mail: [vynopee@gmail.com](mailto:vynopee@gmail.com)

### **Abstract**

*This study investigated the effect of corporate governance on bankruptcy risk in deposit money banks in Nigeria, using board of directors' independence. Ex Post Facto research design was adopted for the study. A sample of nine deposit money banks was used for the study. Data were obtained from the annual reports and audited accounts of the banks under assessment. Altman's original model for public companies was used to extract data and the formulated hypothesis was tested with regression analysis with aid of E-View 9.0. The analysis and hypothesis tested show that board of directors' independence has a positive significant effect on bankruptcy risk of deposit money banks in Nigeria. Based on the findings, the study recommended that the board of directors' independence be strengthened in order for the board to be more effective at preventing and avoiding bankruptcy once the company becomes distressed.*

**Keywords:** Corporate governance, Board of directors' independence and Bankruptcy risk

## INTRODUCTION

The banking industry's importance and relevance to any economy is based on its primary intermediary role, which is expected to be played professionally, morally, legally, and statistically as a central position in the financial system. Banks, according to Farinde (2013), serve as intermediaries for the efficient transfer of resources from surplus to deficit units. Banks must be safe, sound, and stable in order to perform efficiently and contribute meaningfully to the development of the economy. Bankruptcy has been widely debated and investigated in recent years. While there has been interest in corporate bankruptcy in the accounting and finance literature, the emphasis has primarily been on predicting bankruptcy based on financial data (Beaver, 1966; Altman, 1986). Despite the fact that this phenomenon has already been observed in recent high-profile bankruptcy events, and that some studies on corporate governance and bankruptcy risk have been conducted, it remains an open empirical question how the relationship of corporate governance to the likelihood of bankruptcy works. Financial distress is a broad term used to describe situations in which businesses are experiencing financial difficulties. Failure, default, insolvency, and bankruptcy are the most commonly used interchangeable terms for financial distress (Geng, Bose & Chen, 2015).

According to Fich and Slezak (2008), corporate governance has two potential effects on the likelihood of bankruptcy. The first reason is that it has become clear that financial and accounting data can be manipulated in order to conceal poor performance. Second, because the governance structure of a firm is a nexus of incentive contracts, the efficacy of management response to distress will be determined by the governance structure of the firm. Although it may be difficult to avoid bankruptcy, the greater the bankruptcy, the more likely management will respond to a given level of distress, which may depend on the firm's governance structure.

An efficient and effective banking sector in the economy is critical not only for the promotion of an efficient intermediary role, but also for depositor protection, healthy competition encouragement, system confidence and stability, and protection against systemic risk and collapse (Farinde, 2013). The heinous impact of ill health in the banking sector has impacted almost every aspect of society, including the government, regulatory authorities, creditors, equity investors, bankers, and the general public.

Distressed banking problems always have a massively negative impact on the entire economy. Only viable banks can impose economic stability and confidence on all stakeholders (Adeyemi, 2011). The impact of ill health in the banking sector affected everyone, including the government, regulatory authorities, bankers, and the general public. Such failure had eroded public trust in the system and resulted in massive withdrawals of funds from failed banks to healthy ones, a phenomenon known as flight to safety. Most business units have been destroyed as a result of this inability, and many homes have suffered as a result of the loss of funds. However, some households and businesses that chose to keep their funds in offices and homes lose such funds to bandits and, in the worst-case scenario, their lives (Olaniyi, 2007). In light of this, the major changes that have occurred both in the economy (particularly following the financial crisis, which caused many banks to experience liquidity problems) and in firm activity (in technological and financial terms), which create difficulties in raising funds/credits and the deteriorating interest in safekeeping with banks acts as a disincentive to savings and investments, has hampered the performance of industrial sectors that serve as the engine of the economy. Furthermore, all previous studies pertain to a specific time period, and given the dynamic nature of the Nigerian banking sector, there is a continuing need for additional research. In addition, previous studies did not include corporate governance to determine the extent to which the Altman model can predict

bankruptcy in Nigerian banks. To effectively forecast the direction of the national economy, it is therefore sufficient to predict statistically and prospectively possible distress or insolvency in the banking industry. Following the recent economic recession, using current data, investigate the effect of corporate governance on bankruptcy risk in Nigerian deposit money banks. This study therefore ascertains the effect of board of directors' independence on bankruptcy risk deposit money banks in Nigeria.

## **CONCEPTUAL FRAMEWORK**

### **Bankruptcy Prediction**

Furthermore, a prediction (Latin *prae-*, "before," and *dicere*, "to say") is a statement about a future event. Predictions are frequently, but not always, based on prior experience or knowledge. There is no universal agreement on the precise distinction between the two terms; different authors and disciplines assign different connotations to them.

Although future events are inherently uncertain, so guaranteed accurate information about the future is difficult in many cases, prediction can be useful in assisting in making plans about possible developments; Howard H. Stevenson writes that prediction in business "... is at least two things: important and difficult" (Stevenson, 2008). Predictive inference is one approach to such inference, but the prediction can be done using any of the several approaches to statistical inference. Indeed, one way to describe statistics is that it provides a means of transferring knowledge about a sample of a population to the entire population and other related populations, which is not always the same as prediction over time. Forecasting is the process of transferring information across time, often to specific points in time (Cox, 2006). Forecasting usually necessitates the use of time series methods, whereas prediction is frequently performed on cross-sectional data.

Approaches directly producing bankruptcy probabilities, such as the logit model, as well as more advanced machine-learning methods, have challenged the Altman models. In other countries, under different legal regimes (accounting principles), and in different time frames, direct application of the Z-Score or its variants has proven problematic. Indirect applications, on the other hand (e.g., models with the same variables estimated for a new data set), are still acceptable. Let us cite Altman, Iwanicz-Drozowska, Erkki and Arto (2017)'s paper, which demonstrates the international validity of the Z-Score approach with large data sets, as well as comparisons to logit models that performed similarly or better. It is also worth mentioning Barboza, Kimura & Altman, (2017)'s paper, which compares several machine-learning methods to discriminant analysis and logistic regression.

Today a large area of finance is dedicated to forecasting financial distress or bankruptcy, employing appropriate methodology. Nonetheless, it appears that the finance profession in academia has yet to accept this new methodology as core content in core corporate finance and accounting courses (Damodaran, 2015).

### **Board Independence and Financial Risk**

The non-executive directors appointed to the board to represent the shareholders are known as independent directors. According to Abraham and Cox (2007), independent directors are outsiders who are more likely to minimize agency problems and reduce the need for regulatory intervention in corporate disclosure. According to Lopes and Rodrigues (2007), independent directors are expected to put pressure on management to forcefully release financial information, which includes risk disclosure. In line with this, Elshandidy et al. (2013) argued that having a sufficient number of independent directors on the board would encourage the company to disclose more. Gul and Leung (2004), on the other hand,

documented that the presence of independent directors may not likely address the issue of disclosure due to complex issues. Hence, we hypothesized that independent board of directors does not have significant effect on risk disclosure of Nigerian banks.

Business failure models are broadly classified into two types: quantitative models, which rely heavily on publicly available financial data, and qualitative models, which rely on an internal assessment of the company in question. Both types seek to identify characteristics, whether financial or non-financial, that can be used to differentiate between surviving and failing businesses (Robinson & Maguire, 2001). However, determining which is more important is difficult because different studies identify different ratios as indicators of potential problems. For example, a company may have poor liquidity ratios and be on the verge of insolvency. The same company's high profitability may mitigate the potential risk highlighted by the low liquidity ratios. As a result, traditional ratio analyses may yield incorrect results (Odipo & Sitati, 2008).

Altman set out to combine a number of ratios and create the Z-Score model, which predicts insolvency. This formula was designed for public manufacturing firms, and it excluded all firms with assets of less than \$1 million. Although the original Z score was not intended for small, nonmanufacturing, or nonpublic companies, many credit grantors still use it for all types of customers today. Altman developed two additional prediction models (sometimes referred to as model 'A' and model 'B') for the original Z score (Altman, 1968).

The 'A' z-score model was created for use with private manufacturing companies. The weighting of the various ratios, as well as the overall predictability scoring, differ for this model. Furthermore, while the original score calculated the equity to debt formula using the market value of equity, model 'A' used shareholder's equity on the balance sheet. Model 'B' was created for private general businesses and included the service sector. The sales-to-total-assets ratio is not used in this statistical model, the weighting is different, and the scoring is also different. Although computerized statistical modeling would help determine the weighting of each ratio, common sense allows us to understand the purpose of each ratio (Odipo & Sitati, 2008).

The Altman Z-Score was found to be 72% accurate in predicting bankruptcy two years before the event in its initial test, with a Type II error (false positives) of 6%. The model was found to be approximately 80-90% accurate in predicting bankruptcy one year prior to the event in a series of subsequent tests covering three different time periods over the next 31 years (up until 1999), with a Type II error (classifying the firm as bankrupt when it does not go bankrupt) of approximately 15-20% (Altman, 1968). Z-scores became widely accepted by auditors, management accountants, courts, and loan evaluation database systems around 1985 (Eidleman, 2007). 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). Altman's 1968 model took the following form -:

$$Z = 1.2A + 1.4B + 3.3C + 0.6D + .999E$$

$Z < 2.675$ ; then the firm is classified as "failed"

Where:

A = Working Capital/Total Assets

B = Retained Earnings/Total Assets

C = Earnings before Interest and Taxes/Total Assets

D = Market Value of Equity/Book Value of Total Debt

E = Sales/Total Assets

### **Review of Empirical Studies**

Ezejiolor (2021) studied the impact of the Altman bankruptcy prediction model on the corporate governance of Nigerian deposit money banks. The research design was ex post facto. A sample size of 9 deposit money banks in Nigeria was drawn from a population of 22 banks. Data were gathered from annual reports and accounts of the sampled banks for the years 2009 to 2019. The study used regression analysis and E-View 9.0 to test the hypothesis. According to the data analysis, the Altman bankruptcy predicting model has a positive effect on the frequency of board meetings, and this effect is significantly significant on deposit money banks in Nigeria. Ezejiolor and Okerekeoti (2021) investigated the impact of the Altman bankruptcy forecasting model on board independence and board size in Nigerian deposit money banks. Data was gathered from the annual reports and accounts of the sampled banks from 2009 to 2019. The study used regression analysis with E-View 9.0 to test the hypotheses. According to the data reviewed, the Altman bankruptcy forecasting model has a positive influence on board independence; however, this effect is not statistically significant on deposit money institutions in Nigeria. Furthermore, while the Altman bankruptcy predicting model has a positive effect on board size, this effect is not statistically significant. Ayoola and Obokoh (2018) ascertained the discriminatory power of corporate governance mechanisms such as the board, audit committee, executive management, and auditor in one model for financial distress prediction. The study relied on secondary data obtained from annual financial statements of twenty banks between 2005 and 2015. The descriptive statistics and generalized quantile regression model were used to analyze the data. The study's empirical evidence suggests that financially distressed banks have large boards with members who may not be well versed in banking complexities, as well as chairmen and CEOs with significant shareholdings both individually and collectively. Furthermore, evidence suggests that distressed banks experience a significant drop in customer loyalty. The study concludes that financial distress can be caused by poor corporate governance mechanism. Mwawughanga and Ochiri (2017) used the Altman Z score model from 2005 to examine the financial health of banks listed and not listed on the Nairobi Stock Exchange in Kenya. The Altman Z score, a multivariate financial analysis model, is used in this study to assess the financial health of Kenyan banks. The annual financial statements included a comprehensive income statement and a statement of financial position. Altman 2005's Multivariate Discriminant Statistical techniques were used in the analysis. According to the findings, a high percentage of Kenyan banks were in the grey zone during the study period. The Altman model was concluded to be an average tool that should only be used in conjunction with other measures. Jalan, Kale, and Meneghetti (2016) investigated the impact of leverage and bankruptcy risk on corporate incentives to tax-evade. In a two-date, single-period model in which a firm's perquisite-consuming manager with an equity stake in the firm maximizes her payoff, they derive the optimal level of sheltering for a levered firm. Sheltering, according to the theory, has a negative relationship with leverage, monitoring, manager's bankruptcy costs, and, under certain parametric conditions, manager's equity stake in the firm. They demonstrate that leverage and bankruptcy risk have a negative relationship with sheltering, and that the negative effects of bankruptcy risk and debt on sheltering are stronger for riskier firms and weaker for larger, better-governed, more profitable firms, and firms in the "public eye." From 2007 to 2012, Masoumeh (2016) investigated the relationship between earnings management and earnings quality for bankrupt and non-bankrupt firms listed on the Tehran Stock Exchange. The study measured earnings quality by four separate accounting-based earnings attributes: accruals quality, earnings persistence, earnings predictability; earnings and examined by testing the relationship between discretionary accruals as a measure of earnings management, being opp. The results of estimating unbalanced panel data technique for 55 firms subjected to Altman's model bankruptcy and 198 non-bankrupt firms show that

bankrupt firms prefer opportunistic earnings management, while non-bankrupt firms prefer efficient earnings management. Gnyana (2015) concluded in his research on the prediction of financial distress using the Altman Z score for selected companies in India that the Z score is a popular and effective model and that all investors should analyze the Z score of a company before making an investment decision to avoid financial loss due to financial failure. Ahmadpour and Shahsavari (2014) investigated the earnings quality management and impact on future profitability of Tehran stock exchange bankrupt companies. The technique panel data for 55 companies on the verge of bankruptcy Altman's model results, stating that these companies have a disproportionate composition and proceeded to increased profit management. The findings of the opportunistic theory of earnings management support and demonstrate that earnings quality will be profitable in the future. Ezejiolor, Nzewi, and Okoye (2014) assessed the extent to which we can rely on the Altman Model to predict the possibility of corporate bankruptcy/ failure in the Nigerian banking sector. Data were gathered from bank annual reports and accounts. Altman prediction was used. The results show that the Model was capable of accurately measuring the failure potential of sound and healthy banks. The findings also show that the Altman bankruptcy prediction Model could have successfully predicted the failure of the banks that actually failed in the Nigerian banking sector.

## **METHODOLOGY**

### **Research Design**

Ex Post Facto research design was used due to the nature of the study. The study examined bank audited accounts. This entails using the financial accounts of the banks under review from 2009 to 2020 to generate the financial ratios that discriminated the most in the prediction of healthy banks using the Altman Model.

### **Population and Sample Size**

This population of this study consists of the 9 deposit money banks quoted on the Nigerian Stock Exchange. The study covered ten years annual reports and accounts of these banks from 2009 to 2020. As a result, the "purposive sampling technique was applied (Non-random sample). In this method, the sample is chosen based on what the researcher thinks is appropriate for the study. The banks licence with international authorization was chosen which consist a total of nine (9) out of the twenty two (22) deposit money banks which was inevitably excluded during the data collection process due to incomplete data, hence majority of the other banks are those that either emerged or acquired during the period the study covered without international authorization (See appendix for details).

### **Source of Data Collection**

To obtain reliable information that will help the researcher to ensure the effectiveness of the study in question, data were collected from only secondary sources. This data were obtained from the annual reports and audited accounts of the banks under assessment

### **Data Analysis and Model Specification**

To achieve the study's objectives, the researcher extracted data using Altman's original model for public companies, and the hypothesis was tested using regression analysis with the help of E-View 9.0. The dependent variables required were: Altman prediction model (working capital, retained earnings, earnings before interest and tax, equity, total assets, and total book debts) and independent variables: board of directors independence. This information was obtained from the audited reports and accounts of the banks under review.

The study will use Altman Model given as Zeta "Z"

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

Where:

- $X_1$  = Working capital to total assets
- $X_2$  = Retained earnings to total assets
- $X_3$  = Earnings before interest and taxes to total asset
- $X_4$  = Value of equity to total book debt
- $X_5$  = Gross earnings to total assets

The decision rule is that:

- (i). For  $Z < 1.81$  Bankruptcy region
- (ii). For  $1.81 < Z < 2.675$  High bankruptcy potential
- (iii). For  $2.675 < Z < 2.99$  Low bankruptcy potential
- (iv). For  $Z > 2.99$  Strong (No sign of bankruptcy at all).

The Altman Model was modified thus to incorporate corporate governance:

$$ATMN_{it} = a_0 + \beta_1 BDI + \dots + i$$

Where;

$ATMN$  = Altman Prediction Model

$BDI$  = Board of director's independence

## ANALYSIS AND RESULTS

### Data Analysis

**Table 1: Descriptive Analysis**

	ATMN	BIND
Mean	2.770944	1.750000
Median	2.400000	2.000000
Maximum	6.577000	2.000000
Minimum	0.399000	1.000000
Std. Dev.	2.221299	0.452267
Skewness	0.358557	-1.154701
Kurtosis	1.641691	2.333333
Jarque-Bera	1.179627	2.888889
Probability	0.554431	0.235877
Sum	33.25133	21.00000
Sum Sq. Dev.	54.27585	2.250000
Observations	12	12

Table 1 displays the mean (average) for each variable, as well as their maximum and minimum values, standard deviation, and Jarque-Bera (JB) statistics (normality test). The results in Table 1 provided some insight into the nature of the Nigerian banks used in this study. It was discovered that the sampled banks in Nigeria were characterized by positive Altman bankruptcy prediction Model on average over the twelve (12) year periods (2009-2020). (2.771). The Jarque-Bera (JB) test, which looks for normality or the presence of outliers or extreme values among the variables in this table, shows that most of the variables are normally distributed at the 5% level of significance. This means that any variable with an outlier is unlikely to distort our conclusion and is thus trustworthy for drawing generalizations. This also implies that the pooled regression model can be estimated using the least square estimate.

### Test of Hypothesis

$H_{01}$ : Board of directors' independence has no significant effect on bankruptcy risk of deposit money banks in Nigeria.

**Table 2: Regression analysis between Altman predicting model and Board of directors' independence**

Dependent Variable: ATMN  
 Method: Least Squares  
 Date: 11/19/22 Time: 23:12  
 Sample: 2009 2020  
 Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.118037	2.302888	-0.919731	0.3794
BIND	2.793704	1.277412	2.187002	0.0536
R-squared	0.323546	Mean dependent var		2.770944
Adjusted R-squared	0.255901	S.D. dependent var		2.221299
S.E. of regression	1.916118	Akaike info criterion		4.289492
Sum squared resid	36.71509	Schwarz criterion		4.370309
Log likelihood	-23.73695	Hannan-Quinn criter.		4.259570
F-statistic	4.782980	Durbin-Watson stat		1.060716
Prob(F-statistic)	0.053607			

In table 2, a simple least square regression analysis was conducted to test the relationship between Board of directors' independence (BIND) and Altman bankruptcy predicting model (ATMN). The Adjusted R-squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the table 2, the value of adjusted R squared was 0.256, an indication that there was variation of 26% on ATMN due to changes in BIND. This implies that only 26% changes in ATMN of the economy could be accounted for by BIND, while 74% was explained by unknown variables that were not included in the model. The probability of the slope coefficients indicate that;  $P(0.05 < 0.05)$ . The co-efficient value of;  $\beta_1 = 2.793704$  implies that BIND is positively related to ATMN, and this is not statistically significant at 5%.

The Durbin-Watson Statistic of 1.060716 which is less than 2 suggests that the model does not contain serial correlation. The F-statistic of the ATMN regression is equal to 4.782980 and the associated probability F-statistic is equal to 0.053607, so the null hypothesis was rejected and the alternative hypothesis was accepted.

### Decision

Since the Prob (F-statistic) of 0.053607 is equal to critical value of 5% (0.05), then, it would be upheld that board of directors' independence has a significant effect on bankruptcy risk of deposit money banks in Nigeria, thus,  $H_1$  is preferred over  $H_0$ .

### CONCLUSION

This study investigated the effect of corporate governance on bankruptcy risk in deposit money banks in Nigeria, using board of directors' independence. *Ex Post Facto* research design was adopted for the study. A sample of nine deposit money banks was used for the study. Data were gathered from the annual reports and audited accounts of the banks being evaluated. To extract data, Altman's original model for public companies was used, and the hypothesis was tested with regression analysis using E-View 9.0. The analysis and hypothesis testing revealed that the independence of the board of directors has a positive significant effect on the bankruptcy risk of deposit money banks in Nigeria. Based on the findings, the study recommended that the board of directors' independence be strengthened in order for the board to be more effective at preventing and avoiding bankruptcy once the company becomes distressed.



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