EFFECT OF RISK MANAGEMENT COMMITTEE ON THE FINANCIAL DISTRESS OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA; ALTMAN Z-SCORE APPROACH

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Abstract

We investigate risk management committee and financial distress in Nigeria drawing samples from listed industrial goods firms on the floor of the Nigerian Exchange Group market. While financial distress proxied by Altman Z-score is the dependent variable, the independent variables adopted for this study includes risk management committee gender diversity and risk management committee independence. Furthermore, in line with related extant literature, we employed the variable of profitability (return on asset) to control our model's goodness of fit. Data set employed in this study spans through the periods between 2011 and 2020.Specifically, a look at the p-value of the Hausman test (0.0009 we should adopt the fixed effect panel regression results in drawing our conclusion and recommendations. We conclude that an increase in the female members of risk management committee significantly decreases financial distress of listed industrial goods firms under study. However, findings from our study shows that the independence of risk management committee insignificantly increases financial distress of the firms under study. Succinctly, we recommend that Management should employ more resources on risk management committee gender diversity espectially in firms that are finacially disterssed. This is a important owing from our empirical findings which which suggest an inverse relationship between the variable of risk management committee gender diversity and financial distress.

Keywords: **Risk Management Committee Gender Diversity, Risk Managemeny Committee Indpendence, Althman Z-score, Panel Regression**

1.0   Introduction

Risk management committees is responsible for the control, detection, and prevention of risk (Abdullah, Shukor, &Rahmat, 2017; Abdullah & Said, 2019). Prior literatures have proven that poor risk management by corporate governance has been part of the reason behind the series of company scandals and corporate failures (Quon, Zenghal&Maingot, 2012) and some of these failures are the inability to effectively implement risk management programs and strategy (Quon, Zenghal&Maingot, 2012). Akbarian, Rostamy, Rezaei, & Abdi (2019) found that firm performance are significantly and positively related to firms that has effective risk management committees. Specifically, the Z-score formula for predicting financial distress was published in 1968 by Edward I. Altman, who was, at the time, an Assistant Professor of Finance at New York University. Z-scores are used to predict corporate defaults and an easy-to-calculate control measure for the financial distress status of companies in academic studies.

The past few years have seen several well-known companies with significant international operations become mired in financial scandals. In some of these cases, investors have lost hundreds of millions or even billions of dollars. A number of the companies involved have been forced into bankruptcy as a direct or indirect result of the scandals. Collectively, these financial scandals caused many to be concerned about investors' confidence in the integrity of companies. As a means of reducing the weaknesses in corporate governance, several mechanisms have been introduced among which is the adoption risk management framework. We examine the effect of risk management committee on the financial distress of listed industrial goods firms in Nigeria.

A review of several empirical studies from continents in the world showed different results of risk management committee and financial distress. Although studies on this area has been done in Nigeria, but we observed inconsistent findings. For instance, the studies of EL-Maude, Abdul-Rahman, and Muhammad (2017) as well as Abdullah and Said, (2019), reported significant positive effect risk management committee proxies such as size, independence, and financial distress. However, an insignificant positive effect was documented by Abu, Okpeh, and Okpe, (2016). These past studies also completely risk committee gender diversity which constitute key factors that can possibly determine firm financial distress.

We therefore address these research problems by first ensuring the inclusion of variables like risk committee gender diversity in our study as proxies for risk management. We ensure that a larger firm observation of over 10 years is used unlike previous studies of Abobakr and Elgiziry, 2017; Amos, Sharon, and Anita 2016; Zemzem and Kacem 2014; Chaouki and Hadjer 2015; Akbarian, Rostamy, Rezaei, and Abdi 2019; Zheng, Sarker, and Nahar 2018; and Sameera and Wijesena (2018) that use short periods and small firm observations. More than this, the study to the best of our knowledge will be the first in the context of Nigeria to use most recent data including the covid-19 pandemic of 2020 to investigate risk management committee and financial distress of industrial goods firms in Nigeria.

2.0   Conceptual Literature

Financial Distress

A company may fall into distress when it is no longer operating as planned. In such a situation, the company could probably encounter a slight financial difficulty such as liquidity crises (unable to pay salaries or return bank interest). According to Ayoola and Ogechukwu (2018)

distressed firms usually will try to make new deals with at least one of the firm's creditors, while Asquith, Gertner and Scharfstein (1994), noted that when corporations are financially distressed, they try to avoid bankruptcy by restructuring their assets and liabilities (e.g., asset sales, mergers, capital expenditure reductions, layoffs, and restructurings of public and bank debt). Asquith et al. (1994) indicated that debt composition is a strong determinant of financial distress to the extent that it acts as a critical issue in the capital structure decision of distressed firms. Almeida, Campello and Weisbach (2004), documented that cash holding patterns of the firms vary during periods of financial distress because the companies in this situation would have more propensity to retain cash flow, while non-financial distressed firms would not.

Risk Management Committee

Risk management is a way to manage risks that may affect the achievement of a firm's performance. A proactive definition of corporate risk management was given by Liebenberg (2003) as that which enables firms to benefit from an integrated approach of managing risk that shifts the focus of the risk management function from primarily defensive to increasingly offensive and strategic. The risk management framework is to be formally approved by the Board, communicated in simple and clear language to all employees and integrated into the day-to-day operations of the business. Company practices regarding risk management issues in board of directors' meetings vary widely, depending largely upon the size of the company, the sectors in which it operate, the current economic and financial environment, and previous experience with risk management shortcomings. Some research shows that the Risk Management Committees have effectively been playing their role in the control, detection, and prevention of risk especially in terms of financial risk (Abdullah, Shukor, &Rahmat, 2017; Abdullah & Said, 2019).

Risk Management Committee Gender Diversity

Gender differences have been largely investigated in prior literature, with a main focus on the gender diversity of the board of directors, audit committee, auditor gender and top management (CEO and CFO), and their associations with financial reporting (earnings management and conservatism), auditing (audit quality and audit efficiency), and firm outcomes (Khlif and Achek, 2017). The overall results confirm that there are gender differences in risk attitudes and risk taking. Women are more risk averse than men, which affects women's behaviours in management and auditing (Ittonen and Peni, 2012). Gender studies on accounting conservatism and earnings management also indicate that women are more risk averse than men, thus, women are more cautious in the recognition and measurement of income and assets and exert higher control over good news, resulting in less earning management. Gender diversity on audit committees suggests that gender differences may affect auditing practices through auditors' attitudes towards risks.

Risk Management Committee Independence

For the monitoring capacity of a risk committee, risk committee independence from management is important. The involvement of a significant number of non-executive board members is regarded as a strong measure of the board's freedom from management (Abubakar et al. 2018). According to Abubakar et al. (2018), RMC independence includes the number of leaders sitting on the RMC who are independent nonexecutive directors. Subramaniam, Mcmanus, & Zhang (2009) indicated that boards with a larger number of non-executive directors are able to better

analyze risks and consider setting up a risk management committee as a vital tool to assist them in fulfilling their risk management oversight function as opposed to those with a small number of non-executive directors. In the risk committee, Protiviti (2011) stresses that having independent / non-executive directors is a prerequisite for establishing constructive coordination with the administrators and officers in charge of ERM operations of an organization.

Hypotheses Development

Risk Committee Gender Diversity and Financial Distress

Platt and Platt (2012) documented that the average age of directors was negatively related to bankruptcy. However, there is a lack of studies investigating the impact of gender diversity on the probability of financial distress. Prior research has suggested that women are likely to offer new perspectives and enrich the information set available to the firm, as they tend to be more risk averse and cautious towards risk management (Huang and Kisgen, 2013) and are less likely to engage in unethical activities (Shawver et al., 2006; Huang and Kisgen, 2013). These attributes are important when it comes to risk management. For example, aversion to excessive risk taking has been viewed favorably following the GFC, as firms not engaged in excessive risk taking have tended to have a better chance of survival (Hutchinson et al., 2015). Resource dependence theory indicates that having gender diverse directors can provide different beneficial resources to a firm, including the demand for increased monitoring and strong links with community networks (Hillman et al., 2000; Post and Byron, 2015). These crucial and valuable resources may help firms decrease uncertainty, which protects the firms from ultimate failure (likelihood of financial distress). Similarly, from the agency theory perspective, women tend to be more risk averse and cautious towards risk (Huang and Kisgen, 2013). Consequently, they are more likely to enhance risk monitoring (Huang and Kisgen, 2013). From the foregoing, we state our first hypotheses as;

$H0_1$:   Risk management committee gender diversity has no significant effect on the financial distress of listed industrial goods firms in Nigeria

Risk Management Committee Independence and Financial Distress

The Board consists of a risk management committee that functions actively for the sake of corporate governance. The independence of the committee is a crucial problem in previous studies. Under these literatures, the committee enhances reporting independently of the other committee (Lin et al., 2006). As stated under the Corporate Governance Code, the Committee makes an important contribution to ensuring that corporate values are essential because of the independence and professional actions of the committee members. A combined sample from Singapore and Malaysia was used by Bradbury et al. (2006) to analyze the correlation between accounting quality and the composition of the risk committee. The results of the study indicate that the independence of the risk committee increases earnings efficiency. The relation between independence of the risk committee and firm performance was recently investigated by Hamdan et al. (2013) on the list of stock exchange companies in Amman. The risk committee's independence enhances the company's efficiency. From the foregoing, we state our final hypotheses as;

$H0_2$: Risk management committee independence has no significant effect on the financial distress of listed industrial goods firms in Nigeria

Theoretical Review

Stewardship Theory

From Davis et al. (1997), the stewardship theory argues against the opportunistic self-interest assumption of the agency theory, claiming that managers are motivated by a need to achieve, to gain intrinsic satisfaction through successfully performing inherently challenging work, to exercise responsibility and authority, and thereby gain recognition from peers and bosses. In contrast to the agency theory, the stewardship theory proposes that managers are essentially trustworthy individuals and hence, are good stewards of the resources entrusted to them (Chairunesia&Bintara 2019; Kazemian, Shauri, Sanusi, Kamaluddin&Shuhidan 2017). The stewardship theory takes a broader view of human behaviour, proposing that individuals are motivated not only by self-interest, but also by service to others, altruism, and generosity. Moreover, as opposed to people having homo economicus, and being motivated solely by economic considerations, stewardship theory proponents regard as pivotal higher-level needs, including self-actualization, through the fulfilment of personal values and aspirations (Donaldson 1990).

Empirical Review

Setiyono and Arista (2017) analyzed the effect of risk management proxied by the Risk Management Committee size and the internal audit of potential bankruptcy in Indonesia. The study used a sample of companies whose stocks are actively traded on the Indonesia Stock Exchange. The data used were panel data, namely, the data of cross section and time series with twenty-five manufacturing companies listed on the Stock Exchange in 2010 and 2011 and used clustering models for classifying the company which could potentially bankrupt or not, then they employed Altman model Z-scores as financial distress faced by companies. Furthermore, they also used logistics regression analysis. The results show the risk management committee (RMC) and internal audit (IA) significantly affects the potential bankruptcy simultaneously. Partially risk management committee, a significant effect on the potential for bankruptcy, while internal audit (IA) did not significantly influence the potential bankruptcy.

Jia, Hutchinson, and Hogarth (2016) examine risk management committee (RMC) human capital based on Australian listed firms over 2007-2013, and further determine whether RMC human capital is associated with firm performance and bankruptcy likelihood. Based on human capital theory, this study investigates the impact of RMC human capital, such as financial experience, tenure, on firm performance and on firms' bankruptcy likelihood. Data was collected from companies' annual report. Regression analysis was used to test the hypotheses. The results suggest the importance of risk management human capital, in terms of increasing firm performance and lowing the likelihood of bankruptcy. Specifically, the results indicate financial experience and tenure are the main factors increasing firm performance. For firms with female on the RMC, their bankruptcy likelihood is lower than firms without a female on RMC. However, the mere existence of a RMC, or managerial experience, auditing experience, accounting experience, qualifications and compensation do not individually impact on firm performance or bankruptcy likelihood. The authors concluded that the results of the study can inform firms in terms of the costs and benefits of investing in RMC human capital. Additionally,

this study informs regulators about the current RMC human capital in Australia and provides implications to policy maker in relation to regulating better risk management practice – in relation to firms' human capital.

Tasman and Masdupi (2018) predict the determinant of financial distress and bankruptcy which consists of seven financial ratios such as net working capital to total assets, current asset to sales, current liabilities to total assets, market value of stock to book value of total debt, sales to total assets, retained earnings to total assets and earnings before interest and tax to total assets. Population of this study is all of miscellaneous industry which are listed on Indonesian Stock Exchange (IDX) in the period of 2004 to 2012. Based on purposive sampling, 162 companies-years observations were selected. Sample is classified into distress company group and non-distress company group. The logistic regression is used to answer the research question. The result of this study showed that the financial ratio which selected is determinant of financial distress and bankruptcy.

3.0   Methodology

In this study, we employ the ex post facto research design. Our study is longitudinal covering a period of ten (10) years. That is, from 2011 to 2020 employing listed industrial goods firms on the floor of the Nigerian Exchange Group (NGX). The sampling technique employed is purposive since firms were included in the sample on certain selection criteria. These criteria were based on the view that the firms are listed on the Nigerian Exchange Group (NGX) market from 2011-2020; there were access to their annual financial reports within the period and they were not firms operating subsidiaries in Nigeria that are not listed in the Nigerian Exchange Group (NGX). Newly listed firms and delisted firms were excluded from the study. Thus, only industrial goods firms that had all relevant data due to continuous existence were included in the sample. Our final sample size consists of 10industrial goods firms that was arrived at based on the availability of data for ten years for all the research variables. To examine the effect of risk management committee on financial distress, we adopted and modified the model of Jia (2019) to express our econometric model as

$$ZSCO_{it} = \beta_0 + \beta_1 RCGD_{it} + \beta_2 RCID_{it} + \beta_3 RETA_{it} + \mu_{it}$$

Where:

ZSCO	=	Altman Z-score (Measure of Financial Distress)
RCMS	=	Risk management committee gender diversity
RCDI	=	Risk management committee independence
RETA	=	Profitability (Control Variable)
β_0	=	Constant
β_1- β_4	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	i^{th} firm
t	=	time-period

Thus, our apriori expectations are stated as; X_1-X_3>0: which means that a reduction in the determinant variables of risk management committee gender diversity and risk management

committee independencewill lead to a rise in financial distress of listed industrial goods firms in Nigeria. The econometric techniques adopted in this study are the panel fixed and Random effect regression techniques. The rationale for its usage is based on the following justifications: the data that will be collected may have time and cross-sectional attributes as well as across the sampled firms (cross-section); panel data regression provides better results since it uses large observation and reduces the problem of degree of freedom (Muhammad, 2012); it avoids the problem of multicollinearity and help to capture the individual cross-sectional (or firm-specific) effects that the various pools may exhibit with respect to the dependent variable in the model.

Variable Measurement

In this study, the dependent variable is financial distress. This study identified financially distressed firms using the Altman's (1983) Z-Score model which he revisited in 2002 in his study of 'revisiting credit scoring models in Basel two environments. This revised model is intended for both privately held and publicly listed firms and for both manufacturing and non-manufacturing firms (Altman et al. 2017). The independent variable is risk management committee which is proxied in terms of risk management committee gender diversity and risk management committee independence. We measure Risk committee diversity in percentage as Female risk committee members to total risk committee members. In the same vein, we measure risk management committee independenceas the non-executive directors and shareholder's representatives in risk committee to total risk committee member's size.

4.0   Empirical Results and Discussion of Findings

Weinvestigate risk management committee and financial distress in Nigeria drawing samples from listed industrial goods firms on the floor of the Nigerian Exchange Group market. While financial distress proxied by Altman Z-score is the dependent variable, the independent variables adopted for this study includes risk management committee gender diversity and risk management committee independence. Furthermore, in line with related extant literature, we employed the variable of profitability (return on asset) to control our model's goodness of fit. Data set employed in this study spans through the periods between 2011 and 2020. Table 4.1 below describes the data in terms of the companies which they belong. Overall, the descriptive statistics provides some insight into the nature of the selected Nigerian listed industrial goods companies that were employed in this study.

Descriptive Analysis

In this section, we examine the descriptive statistics for both the explanatory and dependent variables of interest. Each variable is examined based on the mean, standard deviation, maximum and minimum. Table 1 below displays the descriptive statistics for the study.

Table 1: Descriptive Statistics

VARIABLES	MEAN	SD	MIN	MAX	NO OBS
ZSCO	3.14	3.22	-8.99	16.85	100
RCGD	5.88	10.88	0	33.33	100
RCID	29.51	35.88	0	88.24	100
RETA	7.01	26.27	-179.92	108.90	100

Source: Author (2022)

The table above shows the summary of the descriptive statistics of the study. From the table it is observed that financial distress as measured by Z-score (ZSCO) had a mean of 3.14 with a standard deviation of 3.22. In the case of the independent variable, we find that the mean of risk management committee gender diversity(RCGD) was 5.88 with a standard deviation of 10.88. In the same vein, we find that the mean of risk management committee independence (RCID) was 29.51 and a standard deviation of 35.88. In the case of the control variable, the table shoes that profitability (RETA) had a mean of 7.01 and a standard deviation of 26.27.

Correlation Analysis

In examining the association among the variables, we employed the Spearman correlation coefficient (correlation matrix), and the results are presented in the table below.

Table 2: Correlation analysis

	ZSCO	RCGD	RCID	RETA
ZSCO	1.00			
RCGD	0.02	1.00		
RCID	0.06	0.60	1.00	
RETA	0.81	0.14	0.16	1.00

Source: Author's computation (2022)

In the case of the correlation between the variables of interest, the above results show that there exists a positive and weak association between risk management committee gender diversity and financial distress (0.02). There exists a **positive and weak a**ssociation between risk management committee independence and financial distress (0.06). In terms of the control variable, we find that there exist a positive and weak association between profitability and financial distress (0.81). To test our hypotheses a regression results will be needed since correlation test does not capture cause-effect relationship.

Regression Results

Specifically, to examine the cause-effect relationships between the dependent variables and independent variables as well as to test the formulated hypotheses, we present a panel data regression and an OLS pooled results in the table below.

Table 2: Regression Result

	ZSCO Model (Pooled OLS)	ZSCO Model (FIXED Effect)	ZSCO Model (RANDOM Effect)
C	2.69 {0.000} ***	3.01 {0.000} ***	2.89 {0.000} ***
RCGD	-0.03 {0.252}	-0.06 {0.007} **	-0.05 {0.018} **
RCID	-0.00 {0.915}	0.00 {0.825}	0.00 {0.710} **
RETA	0.09 {0.000} ***	0.06 {0.000} ***	0.07 {0.000} ***
F-statistics/Wald Statistics	41.47 (0.00) ***	37.90 (0.00) ***	118.05 (0.00) ***
R- Squared	0.56	0.57	0.56
VIF Test	1.44		
Heteroscedasticity Test	35.97 (0.0000) ***		
Hausman Test		16.60 (0.0009)	

Note: **(1) bracket {} are p-values**
(2) **, *, implies statistical significance at 5% and 1% levels respectively**

In the table above, we observed from the OLS pooled regression that the R-squared value of 0.56 shows that about 56% of the systematic variations in financial distress proxied by Altman Z-score in the pooled industrial goods firms over the period of interest was jointly explained by the independent and control variables in the model. The unexplained part of financial distress can be attributed to exclusion of other independent variables that can impact on financial distress but were captured in the error term. The F-statistic value of 41.47 and the associated P-value of 0.00 shows that the OLS regression on the overall is statistically significant at 1% level, this means that the regression models is valid and can be used for statistical inference. The table above also shows a mean VIF value of 1.44 which is within the benchmark value of 10, this indicates the absence of multicollinearity in the models, and this means no independent variable should be dropped from the model. Also, from the table above, it can be observed that the OLS results had heteroscedasticity problems since its probability value was significant at 1% [35.97 (0.0000)]. The presence of heteroscedasticity in the model clearly shows that our sampled firms are not homogeneous. This therefore means that a robust or panel regression approach will be needed to capture the impact of each firm heteroscedasticity on the results. In this study we adopted the panel regression method using both fixed and random effect models.

The F-statistic and Wald-statistic value [{37.90 (0.00)}] and [{118.05 (0.00)}] for fixed and random effect regression respectively shows that both models are valid for drawing inference since they are both statistically significant at 1%. In the case of the coefficient of determination (R-squared), it was observed that 57% and 56% systematic variations in financial distress proxied by Altman Z-score was explained jointly by the independent and control variables in both models respectively. This therefore implies that more of the variation in financial distress were explained when compared to the OLS pooled regression. In selecting from the two panel regression estimation results, the Hausman test was conducted, and the test is based on the null hypothesis that the random effect model is preferred to the fixed effect model. Specifically, a look at the p-value of the Hausman test (0.0009), implies that we should reject the null

hypothesis and accept the alternative hypothesis at above 5% or 1% level of significance. This implies that we should adopt the fixed effect panel regression results in drawing our conclusion and recommendations. This also implies that the fixed effect results tend to be more appealing statistically when compared to the random effect. Following the above, the discussion of the fixed effect results became imperative in testing our hypotheses. The below is a specific analysis for each of the independent variables using the fixed effect regression.

Discussion of Findings

Since, the study is an extension of existing studies, only few findings in literature are not in agreement with the current positions of this study. Specifically, we find that risk management committee gender diversity (Fixed effect regression = -0.06 (0.007)) as an independent variable to financial distress appears to have a negative and significant influence on financial distress. This therefore means we should reject the null hypothesis {$H0_1$: risk management committee gender diversity has no significant effect on the financial distress of listed industrial goods firms in Nigeria}. This suggests that an increase in the female members of risk management committee significantly decreases financial distress of listed industrial goods firms under study. Prior research has suggested that women are likely to offer new perspectives and enrich the information set available to the firm, as they tend to be more risk averse and cautious towards risk management (Huang and Kisgen, 2013) and are less likely to engage in unethical activities (Shawver et al., 2006; Huang and Kisgen, 2013). These attributes are important when it comes to risk management. For example, aversion to excessive risk taking has been viewed favorably following the GFC, as firms not engaged in excessive risk taking have tended to have a better chance of survival (Hutchinson et al., 2015). We agree with theResource dependence theory which indicates that having gender diverse directors can provide different beneficial resources to a firm, including the demand for increased monitoring and strong links with community networks (Hillman et al., 2000; Post and Byron, 2015).

We also document that risk management committee independence (Random effect regression = 0.00 (0.825)) as an independent variable to financial distress appears to have a positive and insignificant influence on financial distress. This therefore means we should accept the null hypothesis {$H0_2$: risk management committee independence has no significant effect on the financial distress of listed consumer goods firms in Nigeria}. This suggests that the independence of risk management committee insignificantly increases financial distress of the firms under study.Fich and Slezak (2008) found that small firms with independent boards and large executive director shareholdings are less likely to be financially distressed. Lajili and Zeghal (2010) revealed that firms that went bankrupt tended to have higher director turnover and shorter outside director tenure.The risk committee's independence has been shown in relation to the success of businesses. The independence of the risk committee and the financial results of Oman are significantly positive (Al-Matari et al., 2014). Conversely, no connection exists between the independence of the risk committee and the financial results of Indian companies (Bansal and Sharma, 2016). On the contrary, as reported by Robin and Amran (2016), there are negative links between independent risk committee and firm performance (2016).

Conclusion and Recommendation

Risk tolerance is the amount and type of risk that a company is capable of and ready to bear in its risks and market practices, despite its corporate priorities and stakeholder responsibilities. The prediction of financial distress is absolutely vital for traders, creditors, and suppliers. To avoid any financial loss, they need to assess the financial risk of a firm before they make any decisions. Financial distress is not the same as bankruptcy. The former occurs while the firm is not able to meet its financial obligations due to a decrease in the firm's operations and excessive costs, while the latter is a very last state in which corporations stop doing commercial enterprise due to financial distress. The bankruptcy needs to be confirmed by a courtroom determination; then, its assets are bought to pay and cover all obligations of creditors. We conclude that an increase in the female members of risk management committee significantly decreases financial distress of listed industrial goods firms under study. However, findings from our study shows that the independence of risk management committee insignificantly increases financial distress of the firms under study. Succinctly, we recommend that Management should employ more resources on risk management committee gender diversity espectially in firms that are finacially disterssed. This is a important owing from our empirical findings which which suggest an inverse relationship between the variable of risk management committee gender diversity and financial distress. Furthermore, we recommend thatregulators should devise policies that advocates for risk committee independence in order to reduce the likelihood of financial distress.

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