

**AUDIT QUALITY AND ACCOUNTING GOING CONCERN OF LISTED MANUFACTURING COMPANIES IN NIGERIA: ALTMAN Z-SCORE APPROACH**

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**ABSTRACT:**

*The deluge of audit failure in the world (Nigeria inclusive), has brought great disappointment to Users of financial reports, making audit quality the subject of focus. The collapse of 83 companies listed on the Nigerian Exchange Group, from which 65 were manufacturing companies in the space of 11 years, 2012-2022, is worrisome and thus questions the quality of the audit performed by the auditors on those financial statements. In line with these problems, this study examined the effect of audit quality on accounting going concern of listed financially distressed and healthy manufacturing companies in Nigeria from 2012 to 2022. The study employed ex-post facto research design. The secondary data for the 12 financially distressed and 12 financially healthy listed manufacturing companies sampled were sourced from the Nigerian Exchange Group, facts books and related companies' Annual Financial Reports for the periods covered in the study. In determining how audit quality affects the accounting going concern of listed financially distressed and healthy manufacturing companies in Nigeria using the Altman Z-score approach as a yardstick for comparison. Particularly, pre-regression analysis which included descriptive statistics analysis, correlation analysis, and normality of data analysis were conducted. The P-values of the parameters obtained from, the mixed effect and the random effect regression analysis technique were used to test the financially distressed and financially healthy manufacturing companies' hypotheses respectively. Notably, the outcome from the panel regression estimations revealed that: hiring the services of a Big four audit companies significantly improved the going concern status of listed manufacturing companies in Nigeria be it financially healthy or financially distressed; the effect of joint audits on accounting going concern of listed manufacturing companies in Nigeria is mixed: while it was insignificant for financially distressed companies, it was significant for financially healthy companies during the period. The study concluded that the effect of audit quality on accounting going concern should be juxtaposed with the financial status (distressed/healthy) of the companies, to obtain a more robust and unique solution to problems faced by listed manufacturing companies in Nigeria. The study recommended among others that listed manufacturing companies in Nigeria should engage the services of Big Four audit companies especially as the services of a Big Four audit companies significantly improve the financial health status of both financially distressed and financially healthy manufacturing companies in Nigeria.*



## 1. INTRODUCTION

Audit quality encompasses the key elements that create an environment by maximizing the likelihood that quality audits are performed consistently. It plays a crucial role in determining the accuracy of accounting going concern assessments. Improving the audit quality through enhanced professional skepticism, auditor expertise, and regulatory oversight can result in more accurate financial reporting and better-informed stakeholder decision-making. For decision-making purposes, information produced by an audit with high audit quality will be highly helpful, hence, auditors must deliver high-quality audit services. And where clients encounter going concern issues, auditors with high audit quality are more likely to offer a going concern audit opinion. The essence of going concern is on the company's financial statement, which must reflect the company's value to determine its existence in the future. A company that is established must have a goal of being able to maintain its business continuity. The auditor has the responsibility to assess whether there is any doubt to his or her opinion on the financial report, based on auditor's regulations, and is also required to provide an opinion regarding the corporation's ability to survive in a period of no more than one year from the date of the audit report (Ikatan, 2001). But the question remains, what if the audit opinion does not provide adequate early warning signals of impending client failure in the financial statement? Then, other red flags to look out for are the measures of audit quality, which include; audit tenure, audit delay, audit fees, audit firm size, joint audit, and so on.

The condition in which a company experiences financial difficulties and is threatened with bankruptcy is known as financial distress. Companies that experience bankruptcy will begin with financial distress conditions in the company. However, if the company is experiencing financial distress, it is not certain that it will end in bankruptcy (Andriyani & Dyatmiko, 2021). Financial distress is a condition in which a company experiences financial difficulties by experiencing a stage of decreasing the company's ability to pay debts to creditors when they fall due (Platt, 2002; Andriyani et al., 2021). Financial distress shows that the company cannot cover current obligations, for example, unpaid debt. Characteristics such as size, maturity, industry, and complexity are found to be related to financial distress (Lu & Ma, 2016). Janes (2005) finds that poor profitability and high financial leverage result to financial distress. A company is said to be financially healthy, if it encompasses the ability to generate revenue, have sufficient cash flow, financial competence and return more money to investors. Based on the explanation above, the researcher is interested in conducting the study audit quality and accounting going concern in Nigeria Altman Z score approach.



### **1.1 Objectives of the Study**

The broad objective of the study was to determine how audit quality affected the accounting going concern of listed manufacturing companies in Nigeria using the Altman Z score approach as a yardstick for comparison. The specific objectives of the study were to determine:

1. the effect of audit firm size on the accounting going concern of financially distressed and healthy manufacturing companies using Altman Z score approach.
2. the influence of joint audit on the accounting going concern of financially distressed and healthy manufacturing companies using Altman Z score approach.

### **1.2 Research Hypotheses**

To achieve the objective of the research, the following null hypotheses were tested:

- i.  $H_0$ : There is no significant difference between the effect of audit firm size on accounting going concern of financially distressed and healthy manufacturing companies in Nigeria.
- ii.  $H_0$ : There is no significant difference between the effect of joint audit on accounting going concern of financially distressed and healthy manufacturing companies in Nigeria.

## **2. LITERATURE REVIEW**

### **2.1 Conceptual review**

#### **2.1.1 Audit Quality**

Audit quality is the capability of an auditor in discovering and reporting any errors in a financial statement, (Amahalu, Okeke & Obi, 2017). Audit quality is the market-estimated joint likelihood that a specific auditor would both detect and disclose a violation in the client's accounting system. The entire quality of the audit exercise is represented by audit quality (Kaoje & Mohammed, 2022). The failure of auditors to discover serious misstatements in financial statements, which raises issues about trustworthiness (Iliemena & Chibuzor, 2019), is one of the primary threats facing investors, necessitating a focus on audit quality.

#### **2.1.2 Accounting Going Concern**

Companies prepare their annual financial statements on a going concern basis except when management either intends to liquidate the entity or to cease operations or has no realistic alternative but to do so, (International Federation of Accountants Handbook, 2010 Edition). If a company is not a going concern, this could result in the impairment of the company's assets (to reflect forced sale values) and also an upward adjustment of liabilities due to penalties for early settlement and or breach of loan terms or covenants, (Mwendamo, 2010). The going concern assumption is fundamental in the preparation of a company's financial statements as it impacts the



basis upon which the assets and liabilities of a company are recorded, (International Federation of Accountants Handbook, 2005 Edition). Auditing standards require the auditor to obtain sufficient and appropriate audit evidence about the appropriateness of management's use of the going concern assumption in the preparation of a company's financial statements and to conclude whether there is a material uncertainty about the entity's ability to continue as a going concern.

### 2.1.3 Altman Z Score Model

A numerical measurement used to predict the chances of a business going bankrupt in the next two years. The model was developed by American Finance Professor Edward Altman in 1968 as a measure of the financial stability of companies. The Z-score uses multiple inputs from Corporate Income Statements and Statements of Financial Position to measure the financial status of a company (Nwoye, Ekesiobi & Abiahu, 2017)). The inputs which Altman used were twenty-two different financial ratios divided into five categories: Liquidity, Profitability, Leverage, Solvency and Activity (Imade, 2021). The different ratios were combined into a single measure known as Z-Score.

Altman's Z-score formula is written as:

$$z_i = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

Where:

Zeta (z) is the Altman's Z-score

A is the Working Capital/Total Assets ratio

B is the Retained Earnings/Total Assets ratio

C is the Earnings Before Interest and Tax/Total Assets ratio

D is the Market Value of Equity/Total Assets ratio

E is the Total Sales/Total Assets ratio.

The Z-score model is based on five key financial ratios, (Ika & Nadya, 2017):

1. Working capital / total assets:

Working capital/total asset is used to measure the liquidity of the company's assets relative to total capitalization or to measure the company's ability to meet short-term obligations. Indicators that can be used to detect problems at the level of liquidity of the company are the internal indicators such as insufficiency of cash, debt swells trade, utilization of capital declines, additional debt is uncontrollable, and some other indicators.

2. Retained earnings / total assets:

Retained earnings/total asset is used to measure the cumulative profitability. This ratio measures the accumulated profits during the company's operations. The age of companies affects these



ratios because the longer the company operates allows it accelerates the accumulation of retained earnings. This resulted in the company being still relatively new in general and showing the result of a low ratio, except that a very large profit in its early years.

3. Earnings before interest and taxes / total assets:

Earnings before interest and taxes/total asset are used to measure the actual productivity of the assets of the company. The ratio measures the company's ability to generate income from the assets that were used. This ratio is the biggest contributor to the model. Some of the indicators that we can use in detecting a problem with the ability of the profitability of these companies are receivables increased, the loss continuously in several quarters, increased inventory, sales declined, and others.

4. Market capitalization/book value of debt:

Market capitalization/book value of debt is used to measure how much of the company's assets may be impaired before the debt amount is greater than its assets, and the company became insolvent. Capital in question is the combined market value of the ordinary capital and preference shares, while debt includes current liabilities and long-term debt.

5. Sales / total assets:

Sales/total asset is used to measure the ability of management in facing competitive conditions. The ratio measures the ability of management to use assets to generate sales.

#### 2.1.4 Audit Firm Size

In October 2018, the Competitions and Markets Authority (CMA) announced it would launch a detailed study of the Big Four's dominance of the audit sector. Four names – or global brands – dominate the skyline: Deloitte Touche Tohmatsu (Deloitte) PricewaterhouseCoopers (PwC), Ernst & Young (EY) and Klynveld Peat Marwick Goerdele (KPMG). While these Big 4 audit companies are typically seen as single firms, they actually comprise a network of independently owned and managed companies that share a common brand, name and quality standards. The four networks are often grouped together for a number of reasons; they are each comparable in size relative to the rest of the market, both in terms of revenue and workforce; they are each considered equal in their ability to provide a wide scope of quality professional services to their clients; and, among those looking to start a career in professional services, particularly accounting, they are considered equally attractive networks to work in. The Big Four each offer audit, assurance, taxation, management consulting, actuarial, corporate finance, and legal services to their clients.



### **2.1.8 Joint Audit**

Previous study (Imade, 2021) defined joint audit as an audit in which two or more independent auditors, from separate audit firms, are appointed to audit financial statements of an audit client, in such a way that involves: joint development of the audit plan; performing the audit work jointly; making periodic cross reviews and mutual quality controls; issuing and signing a single audit report; and bearing joint liability in case of audit failure.

### **2.1.9 Financially Distressed and Healthy Firm**

The condition in which a company experiences financial difficulties and is threatened with bankruptcy is known as financial distress. Companies that experience bankruptcy will begin with financial distress conditions in the company. However, if the company is experiencing financial distress, it is not certain that it will end in bankruptcy (Andriyani *et al*, 2021). Financial distress is a condition in which a company experiences financial difficulties by experiencing a stage of decreasing the company's ability to pay debts to creditors when they fall due (Platt, 2002; Andriyani *et al.*, 2021). Financial distress shows that the company has no ability to cover current obligations, for example, unpaid debts. Janes (2005) finds that poor profitability and high financial leverage result in financial distress. A company is said to be financially healthy, if it encompasses the ability to generate revenue, have sufficient cash flow, financial competence and return more money to investors.

## **2.2 Theoretical Review**

This study anchored on the audit quality theory propounded by Watkins, Hillison and Morecroft (2004), as it was found to be keenly related to the study.

### **2.2.1 Audit Quality Theory**

Audit quality and perceptions of audit quality have been considered as two different concepts by Watkins *et al.* (2004). In order to keep the distinction between these two concepts Watkins *et al.* (2004) use factors like “monitoring strength” and “reputation” to refer to the actual and perceived audit quality. The monitoring strength helps in influencing and maintaining the quality of the information in the financial statements, whereas the reputation of auditors can influence the credibility perceived by the stakeholders regarding the auditors. The auditor's monitoring strength can be measured via the components of audit quality which are the auditors' degree of competence and independence. The same degree of competence and independence of auditors measured as components of audit quality from the perception of the market then would refer to auditor reputation. Auditor reputation is difficult to observe or measure due to the fact that they are based on the users' beliefs. The audit quality framework presented by Watkins *et al.* (2004), captures the





relationship between audit quality components, audit quality products, and the influences over the information in financial statements. The two products of audit quality which are influenced by the components of audit quality are information credibility and information quality. Variations in the auditor monitoring strength can be reflected in the financial reports in the form of trueness in the economic circumstances of the client firm. Thus, auditor monitoring strength in a way reduces the differences between the economic circumstances reported by the client and the true but unobservable economic circumstances of the client firm. The credibility of information or the reliability of information is impacted by the perceived reputation of the auditor. Auditor reputation is considered to be consistent over the period of audit engagement while audit monitoring strength may vary over the period of audit engagement. The relationship between audit quality and either demand drivers (client risk strategies and agency conflicts) or supply drivers (audit fees and auditor risk management strategies) has been presented in the framework of audit quality presented by Watkins *et al.* (2004). Watkins *et al.* (2004) have summarized the client risk strategies which is one of the demand drivers of audit quality, that high-quality information is signaled by the companies by demanding auditors with highly-acclaimed brand-name. But this may not be the case for risky clients, for whom both the demand and the ability to signal high-quality information are being mitigated by the pricing of the brand name audits.

### 2.3 Empirical Review

Amahalu, Okeke, and Obi (2017), ascertained the determinants of audit quality with a focus on healthcare firms listed on the floor of the Nigeria Stock Exchange from 2010-2016. This study made use of secondary data obtained from fact books, annual reports, and accounts of selected healthcare firms under study. The result of this study revealed that there is a positive and statistically significant relationship between audit independence, audit tenure, audit firm size and audit quality of healthcare firms listed on the floor of Nigerian Stock Exchange at 5% level of significance.

Andriyani and Dyatmiko (2021), aimed to examine the effect of audit quality, financial distress, and audit lag, going concern audit opinions on transportation sector companies listed on the Indonesia Stock Exchange (IDX) in 2016-2020. The type of data used was secondary data in the form of audited financial reports and independent auditor reports obtained from the IDX official website. The sample in this study amounted to 70 samples determined by purposive sampling method. The results showed that audit quality had no significant effect on going-concern audit opinion, financial distress had a significant effect on going concern audit opinion, audit lag had no significant effect on going-concern audit opinion. Based on the results of the study, financial



distress can be used as material for auditors' consideration in providing a going concern audit opinion.

Chang and Hwang (2020) investigated whether a firm's financial distress is predictable using artificial intelligence techniques and research methods. The authors analyzed whether audit quality is the key factor that affects the occurrence of a company's financial distress in China. Using the binary choice model and life test method, the evidence indicates that the audit quality of the firm is negatively correlated with the probability of the firm's financial distress. The authors concluded that firms with higher audit quality would be more likely to reduce the probability of financial distress.

Egolum and Ezeh, (2021) examined the effect of audit quality on accounting going concern. Specifically, this study explored two key measures of audit quality by making use of a sample of thirty-eight (38) listed manufacturing firms in Nigeria for the period ranging from 2013 to 2018. Audit quality proxies that were considered in this study include; audit fee and audit firm size which represented the independent variables while accounting going concern (dependent variable) is measured in the framework of the Altman Z-score index and firm leverage served as a control variable in the specified model. In this study, the hierarchical regression analysis technique was employed to evaluate the panel data set that was collated from annual financial reports of the sampled manufacturing listed firms. The finding indicated that audit firm size indeed does improve the going concern status of the firm during the period under investigation. This finding translated to support the view that non-audit services such as audits of employee benefit plans, as well as consultations concerning financial and tax planning provided by big four audit services, help to improve a firm's going concern status.

Imade (2021), examined audit quality and concept of going concern in quoted nonfinancial companies in Nigeria. We employed audit quality proxies which include Audit Firm Size, Audit Tenure, Audit Fee, Joint Audit, and Audit Delay also representing the independent variables and Altman Z scores index (dependent variable) as proxy for accounting going concern. This study employed secondary data obtained from related companies annual reports published by the Nigerian Stock Exchange. The population of this study includes all nonfinancial companies listed on the floor of the Nigerian Stock Exchange market during a 10 years period ie between 2011 and 2020. The sample after adopting Krejcie and Morgan sample size computation technique consist of 84 companies. The results indicate that audit firm size, audit tenure, and audit fee have statistically significant effect on going concern concept. However, joint audit and audit delay show





no statistically significant effect on going concern concept of listed non-financial firms in Nigeria during the period under review.

Kaoje and Mohammed (2022) examined the impact of audit quality on the financial performance of quoted Oil and Gas marketing companies in Nigeria. The population comprises of 11 oil and gas companies quoted on the Nigeria Exchange Group Plc. The paper adopted the longitudinal and ex-post facto research designs. Data were gathered from the published annual reports and accounts of the sampled oil and gas companies. The results revealed that audit firm type and auditors' tenure have no significant relationship with the financial performance of the quoted oil and gas marketing companies in Nigeria which is evidenced by a p-value of 0.995 and 0.730 respectively.

Putri, (2020) examined the factors affecting going concern audit opinions. This study determined the effect of audit quality, the size of the company, the audit opinion the previous year, the ownership of the company, the company's growth, debt default, opinion shopping, bankruptcy prediction, and the factor of the audit committee together against going concern audit opinion on the companies listed in the Indonesia Stock Exchange. In this study, researchers used purposive sampling and obtained a sample size of 141 sample companies listed on the Stock Exchange in the year 2012-2014. The analytical method used is logistic regression. The results of this study indicated the quality of the audit, the size of the company, and managerial ownership affect the going concern audit opinion while the audit opinion in previous years, institutional ownership, growth, debt default, opinion shopping, bankruptcy prediction, the activity of the audit committee, and membership of audit committees do not affect the going concern audit opinion.

Yunus, Nagian, and Wilsa (2022), studied the influence of audit quality, financial condition, and earnings management on the auditor's opinion on going concern with corporate mechanism as a moderating variable. This study analyzed data from the financial statements of 49 manufacturing companies listed on the Indonesian Stock Exchange in 2018-2020. The results of this study provided empirical evidence that giving a going concern audit opinion by the auditor is not based on the quality of the auditor because he acts by auditing standards.

Most of the existing empirical audit quality literature originates from other countries around the world, with vibrant capital markets (Yunus *et al*, 2022; Andriyani *et al*, 2021; Chang *et al*, 2020; Putri, 2020), very little research has been conducted in countries where capital markets are less developed. Thus, it is evident that there is a need for research on audit quality and accounting



going concern in Nigeria. To improve the statistical relevance of the result sample compared to the prior related studies in Nigeria, the researcher extended the period of the study to 2022.

### 3. MATERIAL AND METHOD

This study employed an *ex-post facto* research design, the population of the study consisted of all the fifty-nine (59) manufacturing companies listed on the Nigerian Exchange (NGX) Group, as of December 31, 2023. The study drew its sample size through a purposive non-probability sampling technique. To ensure uniformity of mean and common basis of comparison, the researcher selected twelve (12) financially distressed companies and twelve (12) financially healthy companies, using Edward Altman’s guideline. The study relied on secondary data from the Nigerian Exchange (NGX) Group, fact books and annual reports. The fixed effect and random effect regression analysis techniques were used to test the hypotheses formulated, with the aid of STATA 14.0 and validated at 5% level of significance.

Based on the chosen approach of selection, if the Z value of the studied company is smaller than 1.81, then the company is at high risk of bankruptcy, when the Z value is between 1.81 and 2.99 it still has a risk of bankruptcy, when the Z value is above 2.99 the company is predicted to be in a safe condition. The Edward Altman guidelines distribution is shown in Table 1.

Table 1 Edward Altman Guidelines

SITUATION	Z-SCORE	ZONES	RESULT
1	Below 1.79	Bankruptcy zone	Failure is certain
2	1.8 to 2.9	Healthy zone	May or may not fail
3	Above 3	Too healthy	Will not fail

Source: Imade (2021)

From the table 1,

1. A firm with Z-Score below 1.8 is in Qualified Audit Opinion Zone.
2. If a firm has a Z-Score between 1.8, and 3, its audit opinion zone is uncertain to predict.
3. Z-Score of above 3 implies that the firm is in Unqualified Audit Zone.

Although there has been much criticism regarding the effectiveness of Z-score models, but Z-score model continues to be used in a variety of business situation from actual bankruptcy to financial distress conditions. It has been applied as management decision tool and as an analysis tool by auditors to assess clients’ ability to continue as going concern (Imade, 2021).



The model for this study was adapted from the study of Imade, (2021) but modified to suit the hypotheses of this study which centred on the effect of audit quality on the accounting going concern of listed manufacturing companies in Nigeria. The functional form is stated as.

Going Concern = f (Audit Firm Size, Joint Audit, Control) ..... (1)

This can be re-written in explicit form as:

ZSCORE = π<sub>0</sub> + π<sub>1</sub>AFSIZE + π<sub>2</sub>JA + π<sub>3</sub>FLEV ..... (2)

Accounting Going Concern Econometric Model

Financially Distressed Manufacturing Companies

fdz-score<sub>it</sub> = π<sub>0</sub> + π<sub>1</sub>AFSIZE<sub>it</sub> + π<sub>2</sub>JA<sub>it</sub> + π<sub>3</sub>FLEV<sub>it</sub> + ∑<sub>t</sub>..... (3)

Accounting Going Concern Econometric Model

Financially Healthy Manufacturing Companies

fhz-score<sub>it</sub> = π<sub>0</sub> + π<sub>1</sub>AFSIZE<sub>it</sub> + π<sub>2</sub>JA<sub>it</sub> + π<sub>3</sub>FLEV<sub>it</sub> + ∑<sub>t</sub>..... (4)

Where;

fdz-score = Financially Distressed Altman Z-score

fhz-score = Financially Healthy Altman Z-score

AFSIZE= Audit firm size

JA= Joint Audit

**Control Variables**

FLEV = Financial Leverage

it = (i = no of cross section and t = time periods)

∑ = Model Error Term

**3.1 Decision Rule**

Accept Alternate hypothesis and reject Null hypothesis, if P-value <0.05

Accept Null hypothesis and reject Alternate hypothesis, if P-value >0.05

**4. RESULT AND DISCUSSIONS**

**4.1 Data Analysis**

In this study, descriptive statistics, correlation analysis, tests for normality of data, and panel regression were conducted to identify the possible effect of audit quality on accounting going concern for listed manufacturing companies in Nigeria. Moreso, panel regression post estimation test such as test for multi-collinearity, and test for possible heteroscedasticity were conducted. The descriptive statistics in the tables 4a and 4b provide some insight into the nature of the selected listed manufacturing companies used in this study. The Tables 4a and 4b show the mean, maximum, minimum, and standard deviation for each of the variables of interest.



Table 4a Descriptive Analysis Result: Financially Distressed Manufacturing Companies

Variable	Mean	Std. Dev.	Min	Max
Zscore	.5278788	.9110702	-1.62	1.27
Afsize	.5	.5019048	0	1
Ja	.0454545	.2090924	0	1
flev	60.12462	22.3987	15.07	117.36

Source: Author's Computation, 2023

Table 4a described the basic statistics of the variables employed in this study for observations of listed financially distressed manufacturing firms (based on Altman Z Score Categorization) in Nigeria during the 2012 to 2022 period. The basic statistics of the variables that have been described include the mean values, the standard deviation values, the minimum and the maximum values. From table 4a, the average value computed for Z score observation is seen to be 0.53 which corresponds to a minimum value of -1.62 and a maximum value of 1.77 while the mean value for audit firm size (afsize) stood at 0.5 during the same period.

The statistics result indicates that while about 50% of the firms in the financially distressed category hired the services of at least one Big Four audit firm during the period under investigation, the financial health status did not improve beyond the distress zone at the point in time. This outcome can be said to be intriguing because it raises some level of concern over the capacity and abilities of the so-called Big Four audit firms. Joint audit practice is revealed to be patronized by about 5% of the sample observation which indicates that the quest for joint auditing is materially low for manufacturing firms experiencing financial distress situations.

Table 4b Descriptive Analysis Result: Financially Healthy Manufacturing Companies

Variable	Mean	Std. Dev.	Min	Max
Zscore	3.835714	.9824288	3.1	6.37
afsize	.6285714	.4902409	0	1
ja	.0857143	.2840286	0	1
flev	54.68029	13.58642	26.86	89.32

Source: Author's Computation, 2023

Table 4b described the basic statistics of the variables employed in this study concerning observations for listed financially healthy manufacturing firms (based on Altman Z Score Categorization) in Nigeria during the 2012 to 2022 period. Simply from table 4b, the average value computed for the Z score is seen to be 3.83 which corresponds to a minimum value of 3.1 and a



maximum value of 6.37 while the mean value for audit firm size (afsize) stood at 0.628 during the same period. The descriptive statistics result indicates that about 63% of the firms in the entire observation hired the services of at least one of the Big Four audit firms during the period under investigation. This is seen to be slightly higher (3%) than manufacturing firms that fall under the financially distressed zone. In this regard, one can conclude that there is not much difference between the demand for Big Four audit firms by financially distressed manufacturing firms and the demand for Big Four audit firms by financially healthy firms during the period under study.

Joint audit practice is revealed to be patronized by about 3% of the sample observation which indicates that the quest for joint auditing is materially lower for manufacturing firms experiencing good financial positions than for manufacturing firms experiencing distressed financial positions.

#### 4.1.1 Test for Normality of Data

This study adopted the Shapiro-Wilk test for normality test procedure for  $n = 10$  to  $n = 2000$  which is in line with the position of Razali and Wah (2011). Consequently, the test for normality of data is conducted as shown in the tables 5a and 5b:

Table 5a Analysis for Normality of Data : Financially Distressed Manufacturing Companies

Shapiro-Wilk W test for normal data

Variable	W	V	Z	Prob>z
zscore	0.92382	7.947	4.668	0.00000
afsize	0.99941	0.062	-6.275	1.00000
ja	0.75350	25.716	7.312	0.00000
Flev	0.98852	1.197	0.406	0.34243

Source: Author’s Computation, 2023

From the results presented in table 5a, it is seen that accounting going concern proxied as Zscore (Prob > z = 0.00000) for the financially distressed firms is significant at 1% level, hence, the variable is not normally distributed. Similarly, the independent variable, joint auditor (Prob > z = 0.00000) is not normally distributed since the probabilities of the z-statistics provided by the Shapiro wilk test for normality is significant at either 1% or 5% level. However, the independent variable: audit firm size (Prob > z = 0.00140) as well as the control variable of leverage (Prob > z = 0.34243) are normally distributed judging from the insignificant z value.



Table 5b Analysis for Normality of Data: Financially Healthy Manufacturing Companies  
Shapiro-Wilk W test for normal data

Variable	W	V	Z	Prob>z
zscore	0.73923	9.308	4.657	0.00000
afsize	0.98327	0.597	-1.076	0.85901
ja	0.68773	11.146	5.033	0.00000
Flev	0.96774	1.151	0.294	0.38420

Source: Author's Computation, 2023

From the results presented in table 5b, it is seen that accounting going concern proxied as Zscore (Prob > z = 0.00000) joint audit (Prob > z = 0.00000), for financially healthy firms is significant at 1% level, hence, the variable is not normally distributed. However, the independent variable, audit firm size (Prob > z = 0.85901), is normally distributed since the probability of the z-statistics provided by the Shapiro wilk test for normality is insignificant. The outcomes are compelling as it can be observed that more of the independent and the control variables tend to be normally distributed in the financially healthy sample frame. Worthy of note is that the interpretations of these outcomes have been justified following the study of Bera and Jarque (1982).

#### 4.1.2 Correlation Analysis

This study employed the Spearman Rank Correlation analysis technique to conduct the correlation analysis test for the variables of interest as shown in tables 6a and 6b.

Table 6a Correlation Analysis Result: Financially Distressed Manufacturing Companies

Variables	zscore	Afsize	Ja	flev
zscore	1.0000			
afsize	0.2038	1.00000		
ja	-0.2472	0.2182	1.0000	
flev	-0.6198	-0.1998	0.1852	1.0000

Source: Author's Computation, 2023

Specifically, the analysis from the Spearman Rank Correlation analysis showed that the variables of interest plus the control variable include joint auditors (-0.2472) and firm leverage (-0.6198) are negatively correlated with the dependent variable (accounting going concern). Notably, the auditors' firm size (0.2038), is seen to be positively correlated with the dependent variable. However, the associations/correlation are seen to be weak (less than 0.70) hence there is not much room to expect the presence of multicollinearity in the estimated model.





Table 6b Correlation Analysis Result: Financially Healthy Manufacturing Companies

Variables	zscore	Afsize	Ja	Flev
zscore	1.0000			
afsize	0.2022	1.0000		
Ja	0.2465	0.1318	1.00000	
flev	0.0543	0.0176	0.1868	1.0000

Source: Author’s Computation, 2023

Clearly, the analysis from the Spearman rank correlation analysis presented in table 6b showed some level of differences in the association among the variables of interest presented in table 6a. In table 6b, it is seen that not all the independent and control variables negatively associate with the dependent variable. Specifically, the variables of auditors’ firm size (0.2022), and firm leverage (0.0543) are positively correlated with the dependent variable (accounting going concern). However, the associations are seen to be weak (less than 0.70) hence there is not much room to expect the presence of multicollinearity in the estimated model.

#### 4.2 Regression Analyses

Specifically, to examine the effect of audit quality (independent variables) on accounting going concern (dependent variable), for financially distressed and financially healthy manufacturing firms in Nigeria, this study employed the panel regression analysis technique and proceeded to validate the estimates. The results obtained are presented in tables 7a and 7b

Table 7a Accounting Going Concern Result: Financially Distressed Sample

	ZSCORE Model (Fixed Effect)	ZSCORE Model (Random Effect)	ZSCORE Model (Mixed Effect)
AFSIZE	-0.096 (0.493)	0.063 (0.651)	0.703 (0.000) ***
JA	0.031 (0.903)	-0.150 (0.562)	-0.069 (0.760)
FLEV	-0.013 (0.000) ***	-0.015 (0.000) ***	-0.011 (0.000) ***
CON	2.593 (0.000) ***	2.903 (0.000) ***	3.387 (0.000) ***
F-/Wald	8.68 (0.0000) ***	60.81 (0.0000) ***	732.17 (0.0000) ***



R <sup>2</sup>	0.3135	0.3020
VIF	1.61	
Hausman Specification Test = 22.00 (0.1012)		
	Presence of Fixed Effect (YES)	Presence of Random Effect Error (YES)
Breusch and Pagan Lagrangian Multiplier Test for Random Effects		
Chibar <sup>2</sup> (01)	=	71.38
Prob > Chibar <sup>2</sup>	=	0.0000 ***
Joint Test for Normality on e:	Chi <sup>2</sup> (2) = 81.86	Prob > Chi <sup>2</sup> = 0.0152 **
Joint Test for Normality on u:	Chi <sup>2</sup> (2) = 53.31	Prob > Chi <sup>2</sup> = 0.0310 **

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

Source: Author’s Computation, 2023; Software: STATA 14.0

Table 7a presented the results obtained from the regression of listed financially distressed manufacturing companies. As observed from the table 7a, the VIF value of 1.61 indicates the absence of multicollinearity. Further, a cursory look at both the F-statistic and Wald-statistic values [8.68 (0.0000) and 60.81 (0.0000)] for fixed and random effect regression models respectively showed that both models are significant at 1%. The coefficient of determination (R-squared) with values of 0.3135 and 0.3020 (fixed and random effect models respectively) indicate that about 31.3% and 30.2% of the systematic changes in the variable of accounting going concern are jointly explained by the independent and control variables. The Hausman specification test [Chi Square value = 22.00, with Probability, = 0.1012] revealed an insignificant probability value indicating the adoption of the random effect model over the fixed effect model. In the selected random effect model, this study test for potential heteroscedasticity in the residua and the diagnostics revealed that there exist significant random errors. Therefore, panel mixed effect regression analysis technique becomes valid to control for the residua errors, make interpretation and policy interpretation for this study.



Table 7b Accounting Going Concern Result: Financially Healthy Sample

	ZSCORE Model (Fixed Effect)	ZSCORE Model (Random Effect)
AFSIZE	0.9535 (0.055)**	0.838 (0.047)**
JA	-1.158 (0.016)**	-0.961 (0.010)**
FLEV	-0.035 (0.146)	-0.010 (0.490)
CON	2.6891 (0.000) ***	5.466 (0.003) ***
F-STAT/WALD STAT	2.21 (0.0223)	12.68 (0.0485)***
R <sup>2</sup>	0.44	0.40
VIF	1.20	
PRESENCE OF FR/RE ERRORS	YES (3.57, 0.0094)	
Hausman Specification Test =	3.78 (0.7060)	
	Presence of Fixed Effect Error (YES)	Presence of Random Effect Error (YES)
Breusch and Pagan Lagrangian Multiplier Test for Random Effects		
Chibar <sup>2</sup> (01)	= 71.38	
Prob > Chibar <sup>2</sup>	= 0.0000 ***	
Joint Test for Normality on e:	Chi <sup>2</sup> (2) = 0.54	Prob > Chi <sup>2</sup> = 0.7641
Joint Test for Normality on u:	Chi <sup>2</sup> (2) = 0.31	Prob > Chi <sup>2</sup> = 0.8225

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

Source: Author's Computation, 2023; Software: STATA 14.0

Table 7b presented the results obtained from the regression for listed financially healthy manufacturing companies. As observed from table 7b, both F-statistic and Wald-statistic values [2.21 (0.0223) and 12.68 (0.0485)] for fixed and random effect regression models respectively showed that both models are significant. The coefficient of determination (R-squared) with values of 0.4387 and 0.3980 (fixed and random effect models respectively) indicate that about 44% and



40% of the systematic variation in accounting going concern are jointly explained by the independent and control variables. The Hausman specification test [Chi Square value = 3.78, with Probability, = 0.7060] revealed an insignificant probability value indicating the adoption of the random effect model over the fixed effect model. Again, in the selected random effect model, this study proceeded to test for potential heteroscedasticity in the residua and the diagnostics revealed no significant error in the residua hence random effect regression analysis technique becomes valid for interpretation and policy interpretation.

### 4.3 Tests of Hypotheses

#### 4.3.1 Hypothesis One

H<sub>0</sub>: There is no significant difference between the effect of audit firm size on accounting going concern of financially distressed and healthy manufacturing companies in Nigeria.

The mixed effect model employed to test the hypothesis for financially distressed firms presented in table 4.4a reveal the result of the variable of audit firm size (afsize) as follows: (Coef. = 0.703,  $z = 5.67$  and P -value = 0.000), while the random effect model employed to test the hypothesis of the financially healthy firms in table 4.4b revealed the result of the variable of audit firm size (afsize) as follows: (Coef. = 0.838,  $z = 1.99$  and P -value = 0.047).

**4.3.1.1 Decision:** The result show that the effect of audit firm size on accounting going concern is positive and significant during the period under review. It is vital to note that the sign (positive) remained consistent for the different samples (distress and healthy) This suggests that “ceteris paribus” (all things been equal) hiring the services of a Big Four audit companies significantly improved the going concern status of the audited firm be it in healthy or distress position. This study rejected the null hypothesis and accepted the alternative hypothesis that there was significant difference between the effect of audit firm size on accounting going concern of financially distressed and healthy manufacturing companies in Nigeria.

#### 4.3.2 Hypothesis Two

H<sub>0</sub>: There is no significant difference between the effect of joint audit on accounting going concern of financially distressed and healthy manufacturing companies in Nigeria.

The mixed effect model presented in table 4.4a for financially distressed firms reveals the result of the variable of joint audit (ja) as follows: (Coef. = -0.069,  $z = -0.31$  and P -value = 0.760) while the random effect model employed to test the effect of joint audit on accounting going concern for financially healthy firms in table 4.4b revealed a result as follows: (Coef. = -0.961,  $z = -2.58$  and P -value = 0.010).



**4.3.2.1 Decision:** Concerning the result, it is revealed that the effect of joint audit on accounting going concern is mixed: statistically insignificant for financially distressed manufacturing firms but statistically significant for financially healthy manufacturing firms during the period under review. This suggests that on average and under the *ceteris paribus* assumption, (all things been equal) hiring joint audit services will significantly plunge financially healthy firms into distress situations. This suggest that financially healthy firms that are engaged in hiring the services of joint auditors will have to contend with distress situations because it's going concern status will significantly deplete. This study rejected the stated null hypothesis, and accepted the alternative hypothesis that there was significant difference between the effect of joint audit on accounting going concern of financially distressed and healthy manufacturing firms in Nigeria.

## CONCLUSION AND RECOMMENDATIONS

In order to keep the distinction between “monitoring strength” and “reputation” of auditors, Watkins et al, (2004), companies, especially those in the manufacturing sector in Nigeria, should strategically consider the choice of audit firm as an integral part of their financial strategy. Opting for a Big Four audit firm may not only enhance the accuracy and reliability of financial reporting but also contribute to improving the overall financial health and credibility of the organization. Therefore, management teams should carefully evaluate the potential benefits of engaging a Big Four audit firm when making decisions about their financial and auditing strategies. Firms and regulatory bodies should recognize the nuanced impact of joint audit practices on financially healthy firms invariably suggesting the need for regulatory guidance that allows flexibility in choosing audit models, enabling financially healthy firms to tailor their audit practices based on their specific needs and circumstances. From the findings obtained from the empirical analysis, this study concludes that the effect of audit quality on accounting going concern should be juxtaposed with the financial status (distressed/healthy) of the firm, to obtain a more robust and unique solutions to problems faced by listed firms in Nigeria.

Based on the outcomes obtained from the regression analysis,

- i. On audit firm size, this study promotes the need for listed manufacturing firms in Nigeria to engage the services of Big Four audit firms based on the outcome that hiring the services of a Big Four audit firm significantly improves the financial health status of both financially distressed and financially healthy manufacturing firms in Nigeria. In addition, policymakers can play a crucial role in fostering an environment that promotes collaboration between large audit firms and smaller audit firms aiming to facilitate knowledge transfer, skill development, and overall capacity building within the auditing sector. By promoting collaboration for audit capacity building, an ecosystem that harnesses the strengths of both big four and smaller audit



firms is created, ultimately enhancing the financial health and stability of the manufacturing sector in Nigeria.

- ii. Given the finding that joint audit practice significantly reduces the financial position of financially healthy manufacturing firms, policymakers should consider promoting regulatory flexibility in the application of joint audit practices. Instead of enforcing a one-size-fits-all approach, regulators can encourage financial flexibility for financially healthy firms to choose the audit model that best suits their specific needs and circumstances. Notably, this recommendation can be achieved by developing clear and flexible regulatory guidance that acknowledges the potential impact of joint audit practices on financially healthy firms. Provide guidelines that allow firms to choose between single and joint audit practices based on their individual characteristics and needs.

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**APPENDIX**

**Table 2 Sample Size (Financially Healthy Manufacturing Companies)**

S/NO	NAME OF COMPANY	LISTING YR	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1	CHAMPION BREWERIES	1983	0	0	0	0	0	0	0	6.37	0	0	3.11
2	CHEMICAL & ALLIED PAINT	1978	4.58	5.31	5.93	5.65	3.83	3.67	3.46	3.17	0	0	3.55
3	CUTIX	1987	0	3.18	0	0	0	3.17	3.18	3.44	0	0	3.11
4	FLOUR MILL OF NIGERIA	1979	0	0	0	0	0	0	0	0	0	0	3.11
5	GREIF NIGERIA	1986	0	0	0	0	0	0	0	0	6.12	0	5.21
6	LIVESTOCK FEEDS	1978	3.37	0	0	0	0	0	0	0	0	0	3.11
7	MCNICHOLIS CONSOLIDATION	2009	0	0	0	3.21	0	0	0	0	0	0	3.33
8	MEYER PLC	1979	0	0	0	0	0	0	0	0	3.12	0	3.66
9	NASCON ALLIED	1992	3.28	0	0	0	0	0	0	0	0	0	3.1
10	NESTLE NIGERIA	1979	0	0	0	0	0	3.34	3.21	0	0	0	3.36
11	NIGERIAN NORTHERN FLOUR	1978	4.42	4.02	4.46	0	0	0	0	0	0	0	0
12	VITAFI NIGERIA	1978	0	0	0	0	0	0	0	3.19	0	0	3.12

Source: Author’s computation, 2023

**Table 3 Sample Size (Financially Distressed Manufacturing Companies)**

S/NO	NAME OF COMPANY	LISTING YR	2012	2013	2014	2015	2016	2017	2018
1	ALUMINIUM EXTRUSION IND.	1986	1.24	1.62	1.54	1.75	1.01	1.49	1.45
2	DANGOTE CEMENT	2010	1.47	1.63	1.24	1.35	0.9	1.25	1.49
3	FTN COCOA PROCESSOR	2008	-0.51	-0.39	-0.9	0.01	-0.68	-0.91	-0.4
4	HONEYWELL FLOUR MILL	2009	1.15	1	1.25	0.64	0.2	0.65	0.81
5	INTERNATIONAL BREWERIES	1995	0.16	1.41	1.51	1.18	1.05	0.98	0.25
6	JOHN HOLT	1974	0.18	0.09	0.07	0.07	0.34	0.28	0.53
7	LAFARGE CEMENT WAPCO NIG	1979	1.23	1.47	1.3	0.92	0.25	0.09	0.44
8	MORRISON INDUSTRIES	1978	0.91	0.77	-0.46	-0.38	-0.9	-1.56	-1.31
9	MULTIVERSE	2008	0.13	-0.35	-0.83	-0.66	-0.91	-0.75	-1.13
10	NEIMETH INT. PHARM	1979	1.54	1.64	1.51	0.6	1.47	0.21	1.77
11	NIGERIAN ENAMELWARE	1979	1.69	1.77	1.31	0.85	1.11	0.95	0.83
12	UAC OF NIGERIA	1974	1.1	1.28	1.25	0.98	1.01	1.03	0.71

Source: Author’s computation, 2023

**Table 3 Sample Size (Financially Distressed Manufacturing Companies) Continued**

<b>S/NO</b>	<b>NAME OF COMPANY</b>	<b>LISTING YR</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>1</b>	ALUMINIUM EXTRUSION IND.	1986	1.41	1.46	1.28	1.33
<b>2</b>	DANGOTE CEMENT	2010	1.1	1.22	1.31	1.33
<b>3</b>	FTN COCOA PROCESSOR	2008	-0.67	-0.6	-0.18	-0.88
<b>4</b>	HONEYWELL FLOUR MILL	2009	0.54	0.56	0.8	0.98
<b>5</b>	INTERNATIONAL BREWERIES	1995	-0.34	-0.3	-0.12	-0.25
<b>6</b>	JOHN HOLT	1974	0.47	0.31	0.12	0.17
<b>7</b>	LAFARGE CEMENT WAPCO NIG	1979	0.7	0.79	1.16	1.49
<b>8</b>	MORRISON INDUSTRIES	1978	-1.18	-1.52	-1.55	-1.62
<b>9</b>	MULTIVERSE	2008	-0.85	-1.19	-0.68	-0.66
<b>10</b>	NEIMETH INT. PHARM	1979	1.71	1.24	1.35	1.36
<b>11</b>	NIGERIAN ENAMELWARE	1979	0.2	0.81	-0.67	-0.25
<b>12</b>	UAC OF NIGERIA	1974	1.28	1.49	1.42	1.47

Source: Author's computation, 2023