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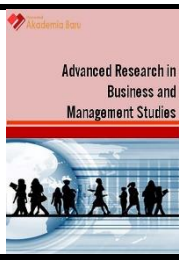

Audit Client Characteristics and Audit Fees of Listed Pharmaceutical Firms in Nigeria

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ABSTRACT

This study aimed at investigating the relationship between audit client characteristics and audit fees of listed pharmaceutical firms in Nigeria for a 6-year period from 2012 to 2017. The study adopted a historical research design and secondary data were obtained from the sample size of seven out of the population of eleven listed pharmaceutical firms in Nigeria and was analysed using descriptive statistics, correlation and multiple regression technique. The study found that audit client size and level of debt significantly determine audit fees, while profitability and inherent risk of audit clients have an insignificant effect on audit fees. Based on these findings, the study concludes, among others, that key audit client characteristics such as size and debt level are relevant in the determination of audit fees. consequently, the study recommends, among others, that management of listed pharmaceutical firms in Nigeria should be proactive in efficient management of assets to ensure full utilization, accurate valuation and reporting as well as maintain optimum and ensure judicious use of debt funds to eliminate incidences of giving wrong impressions to auditors regarding assets mismanagement that would serve as the basis of increasing the amount of audit fees charged by statutory auditors.

Keywords:
Audit client, audit client characteristics, audit fee, pharmaceutical firms

1. Introduction

The fact that in public and most private firms, there is separation of ownership from management, which mostly creates a differences in the needs of these different parties, there is the need for management to report their stewardship to owners of the resources entrusted to them through the preparation and presentation of financial statements. In order to ensure reliability and credibility of financial statements prepared by management, such financial statements are to be audited by a statutory auditor, who is independent of management. This is in line with the provisions of Section 357 of the Companies and Allied Matters Act (CAMA) Cap C20 LFN 2004, as amended. The objective of such audit primarily is to express an independent opinion on the accounts being audited, and secondarily to detect and correct errors as well as prevent fraud, which are committed due to carelessness, negligence, lack of knowledge, or lack of interest on the part of management or

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preparers of the financial statements, and specifically verify the truth, accuracy and/or fairness of the costing data, and to serve as an effective tool for cost control [1]. Such audit should be organized to cover all aspects of the entity as far as they are relevant to the financial statements being audited and provide users with the knowledge of the workings of the firm. This is because such audit conducted is to serve as a monitoring mechanism on the performance of management and provide information relevant to users for economic decision making [2], and provide insurance to both managers and users of financial statement [3].

The auditor so appointed is tasked with various responsibilities as provided in section 360 of CAMA, 2004. These include critical examination of the financial statement, ensuring consistency in the financial report with accounts prepared, and so on. However, an auditor can only carry out these responsibilities if he is duly remunerated or paid for the services he provides, yet he is expected to be independent of the client appointing him. The amount paid for such services provided by the auditor is referred to as audit fees. Audit fees therefore, is the amount paid to the auditor, which covers all relevant cost incurred in the course of the audit engagement and provides for a reasonable portion of profit to the auditor. This implies that audit fee consists of both audit costs and profits. The amount paid as audit fees is of tremendous interest to both audit clients and audit firms as companies are statutorily required to have their accounts audited and want the fees they pay to be reasonable, whereas auditors who provide such services want to ensure that the fees they charge are sufficient to enable a satisfactory service to be provided. They ensure that the fees they receive is not too high, resulting to a threat to their independence and is not too low in order to enable a satisfactory service to be provided [4]. When entering into negotiations regarding professional services, a professional accountant in public practice may quote whatever fee deemed to be appropriate. However, Section 361 of the act states that the remuneration of the auditors may be fixed by the directors, registrar or whosoever appointed them, subject to negotiations between them. The remuneration of the auditor may be fixed at the time of appointment or left to be decided at the completion of the audit. This is because it is not easy to determine the complexity of an audit at the initial stage. Where the fee is to be decided upon completion of the audit, it is advisable for the auditor at the time of appointment to state the basis upon which the remuneration will be determined [5].

Several studies on the determinant of audit fees have been carried out in developed countries [6 – 10], while there has been little of such works in the developing countries like Nigeria. It will also be misleading to assume implicitly that findings in the developed countries like the US in respect of audit fees determinants can be adopted as being exactly the same and having the same effect in the developing economies of Nigeria. This is because of certain peculiarities of the business environments in several developing markets. In addition, the audit environment, general business environment, regulatory framework, culture, technology, legal and business sizes differ significantly. What may be considered as a small company in developed countries may be regarded as large in developing countries. Similarly, most of the variables affecting audit fees in previous studied as well as their mode of measurement are inconsistent. All these factors could reflect in one way or the other in the determination of the audit fees.

Thus, this study seeks to empirically investigate the relationship between audit clients' characteristics such as size, profitability, inherent risk, as well as level of debt and audit fees of pharmaceutical firms listed on the floor of the Nigerian Stock Exchange with the aim to establish the determining potentials these characteristics on audit fees of the firms. Specific objectives of the study include:

i. To investigate whether the size of listed Pharmaceutical Firms in Nigeria determines the audit fees paid;
ii. To ascertain the relationship between profitability and audit fees of listed Pharmaceutical Firms in Nigeria;
iii. To examine the likelihood that the extent of internal risk of listed Pharmaceutical Firms in Nigeria affects their audit fees expenditure; and
iv. To determine the extent to which the level of debts in listed Pharmaceutical Firms in Nigeria contribute to the determination of their audit fees.

This paper is anchored on the agency theory. This is due to the fact that it is the most widely used audit theory as it applies when resolving two issues that can be likely seen or experienced in agency relationship. The first issue is when the goal of the agent is not aligned with the goal of the principal, which results in conflicts of goal achievement and the principal is unable to examine the appropriateness of the agent's conduct. Secondly, the theory addresses the problem of risk, which is pronounced because the principal and agent are likely to act differently toward risk preferences [11]. These problems are generally solved by agency costs when agents do not make decision in the best interest of the principal with the goal of pursing their own interest. Agency problems tend to occur in firms with lower growth rate and higher level of free cash flows because they are more likely to involve in unethical activities. Therefore, as audit risk increases, auditors have to perform more audit service [12,13].

Agoes [14] defines audit fees as the amount charged which depends among others, on the risk of the assignment, the complexity of the services provided, the level of expertise required to carry out the services of proficiency level, the cost structure of the firm concerned and other professional considerations. Audit fee is important to the existence of auditors and audit firms and has been explained in many different aspects by researchers around the world [15,16]. Amba and Al-Hajeri [17] explained that the audit fee is one of the fees paid by a company for the audit service, which is conducted by independent auditors. El-Gammal [13] and Tober [18] have identified audit fees as the salary paid to the auditors based on the audit process of one company and the audit fees is determined based on the contract between the auditors and the audit client on the basis of time, condition and the number of auditors for the audit task [19]. From the perspective of agency theory, Ask and Holm [20] identified audit fees as one of the important factors of monitoring costs, which is one of the factors of an agency fee and the result of the agency relationship between the shareholders (principals) and the managers (the agents). Jensen and Meckling [21] viewed monitoring cost as the cost paid by the principal to build the monitoring process and prevent abnormal behaviours of the managers. However, from a quantitative perspective, Ali and Lesage [22] have explained the definition of audit fees by summarizing the formula of Simunic [23] such that audit fee is equal to the cost per unit of audit service [p] multiplied by the audit time [q] in addition to the cost of risk to compensate for the expected loss [E(L)].

Ali and Lesage [22] explained that the first component [p*q] in the formula would represent the number of audit tasks that are dependent on many factors like the size, profitability or risk of the audit client. And the second component [E(L)] represents the compensation for the expected risk of auditors and audit companies in the case that a failure in an audit is declared. However, Xu [24] stated that besides the amount of audit tasks and the cost per unit, the audit fees had to include the necessary input costs for the auditors to conduct the audit process, and the profit. Audit cost generally, is made up fixed cost which is that cost that will be incurred, irrespective of the level of audit work undertaken. Such cost includes cost of rent, equipment, insurance, wages of non-audit staff, etc. It is also made up of variable costs which are cost that vary according to the level of audit

work undertaken. Such cost is divided into direct cost and indirect cost. The direct cost comprises of cost of time spent by the auditor and his staff in carrying out the audit work, plus other direct expenses related to the audit. The time cost represents the major element in the cost of audit as it includes the cost of the staff time in carrying out the routine audit work, priced on an hourly time rate basis and the cost of the time devoted by the auditor himself or by his partners in preparing for the audit work [23]. Morgan [25] suggested that the auditor must allocate a reasonable salary to himself or to his partners as a basic cost in conducting the practice.

In addition to the time cost, there are other expenses which are directly related to the engagement such as phone calls and travel expenses. Generally, such expenses, like the time cost, should be covered completely by the audit fees, and will form part of it, even if billed separately. The Companies Act of 1985 requires that auditor's remuneration should include any sums paid by the company in respect of the auditor's expenses, and related to the audit. Costs, which are indirectly related to the engagement such as, stationery, depreciation of equipment, and telephones, but cannot be directly identified with it, are the indirect cost. Generally, a reasonable proportion of such cost as well as the fixed cost should be covered by the audit fees. Morgan [25] indicated that such cost, which he classified as overhead expenses, should be distributed among clients. He also indicated methods of allocating such cost such as, the hourly burden rates, which is derived from dividing the annual overhead expenses by the total number of hours charged to clients during the year by both staff and partners, and the basic time rates, where such expenses can be effectively met through the employment of basic time rates established in relation to the direct salary costs of the engagement, or direct salary and an allocation of the overhead. Audit fees should cover the direct audit cost, reimburse the auditor for a fair proportion of both the indirect and fixed cost, and provide an amount of profit. Therefore, it is pertinent that time is the basic starting point in determining audit cost. It is also considered a good base for fixing it, mainly because it is observable by clients, and accurately measurable. The audit fees will seek to cover the time cost and will include an element to contribute both to indirect costs, fixed costs, and profit.

These are attributes or characteristics of the audit client which affects the amount to be charged as audit fees for audit services offered by the auditor. Client attributes include audit client size, profitability, complexity, industry type, inherent risk, proportion of financial asset, level of debt, provisions and fiscal year-end of the firm being audited. For the essence of this study, client size, profitability, firm inherent risk, and level of debt, will be studied as those characteristics of the audit client that are believed to have effect on audit fees; as audit fees tend to increase with an increase in the client's size [26], profitability [27], firm inherent risk [28], and level of debt [13].

The priority to determine the audit fees of a firm is to determine the number of audit tasks to be carried out by the assigned auditor [29]. This is because audit fees equal the cost per unit of audit service multiplied by the number of audit tasks undertaken [23]. However, these two components of the audit fees cannot be completely determined with accuracy. Based on these facts, Xu [24] identified audit client size as one of the representatives of the number of audit tasks. This is because large sized firms have large and complicated number of transaction and will therefore need a more detailed accounting process to analyse the data. Audit client size can therefore be seen as a structural property with the degree of formalization or a contextual variable in respect of the number of people, resources and the amount of activity involved in the organization [30]. It is defined as the total turnover and quantity of commonly owned assets of the firm [31]. It is usually measured by total assets, revenues, sales and number of employees of the client firm. Client size has been studied to have a direct impact on the auditors' work, and the time spent in the auditing process. This is because larger clients have large and complicated number of transactions and will require a more detailed accounting process to analyse the data [26]. This will result in an increase in the audit task and audit

time to be undertaken by the auditor or audit firm, as compared to smaller clients. Hence it is expected that larger client pay higher audit fees compared to smaller clients in the industry [32]. Previous studies such as [33-37] found that the size of the audit client's assets positively determines the amount charged as audit fees.

Also, the profitability of a firm is an important indicator of the performance of management and its efficiency in allocating the available resources of a firm [36]. It is the ability of the firm to generate income or earnings compared to its expenses and other relevant cost. It is also the measure of the firm's efficiency and its ability to generate profits [39]. It is calculated or computed by a number of profitability ratios such as Return on asset (ROA), Return on equity (ROE), and Return on investment (ROI). For the purpose of this study, return on equity (ROE) which is ratio of profit after tax attributable to equity owners to owner's equity will be used as it is seen as the best measure of profitability [26]. Prior researches [40] indicate that the amount of audit fees is significantly influenced by the profitability ratio [41]. This is because companies reporting high levels of profit would disclose more information to highlight their achievements and reduce agency costs [42]. Disclosing more information will be used by the management of profitable companies to signal information about their performance to strengthen their position and justify their compensation [43]. These companies however, will be subjected to a rigorous audit testing of their revenues and expenses; resulting in an increase in audit task and audit time [27]. Hence, profitable companies are likely to pay high audit fees [37]. However, Aronmwan and Okafor [34] and Urhoghide and Izedonmi [36] opined that profitability of the audit client is negatively and insignificantly related to audit fees charged.

Another determinant of audit fees is the inherent risk of the client. Inherent risk is defined as the risk resulting from a material misstatement made in a separate account or a number of accounts in the financial statements due to the accounts specific error of risk [44]. It is a risk posed by an error or omission in the financial statement due to factors other than failure of control. Areas that are more difficult to audit heightens the demand for specific audit procedures performed by experts which can lead to an increase in both time spent on the audit as well as in the audit price per unit [45]. In low inherent risk settings, the auditor can depend on the company's internal control function to a further degree than in a situation where the inherent risk is high. When the inherent risk is high an auditor has to employ both more complex and time-consuming audit tools since the assurance that internal control provides is not sufficient enough to protect against material misstatements [44]. As the risk of material misstatements increases, so does the risk of future litigation and it is therefore in the auditor's interest to limit the risk of misstatements by dedicating more time to the audit assignment. Previous research, such as [46], have indicated that the inherent risk of the firm leads to higher audit fees as the auditor tries to safeguard against future litigation, including the needs for engaging specialist external auditors is on the increase [47,48]. Based on the demand for more time dedicated to the audit and the need for expertise, a positive relationship between the audit fees and the inherent risk is expected [34,37].

In addition, one of the factors which affects the audit fees payable, is the debt level of the client. Debt level is seen as one of the measures of a firm's risk [29]. This is because it indicates how well a firm is able to pay its debts. Debt level is measured by dividing the total liabilities by total asset as the risk measurement when analysing the determinants of the audit fees [49]. If the debt level of a firm is high, the long-term debt structure would not be stable and the firm might not be able to repay all its debts and this would lead to the credit rating of the firm to decrease [26]. Also, firms with high debt level tend to face a lot of losses in its business operation and this is likely to lead to the bankruptcy or the possibility of a drop in the stock price of such firm. Therefore, while auditing these firms, the auditors have to face many risks, especially the risk of expected legal responsibility; so in

order to minimize the risk, the number of audit tasks and the audit time would increase and this would likely affect the audit fees to be paid or charged by the auditor [33,50].

2. Methodology

This study adopted the historical research design. This is because it examines whether the features of audit clients determine their audit fees, based on historical data. The population of the study comprises pharmaceutical firms listed on the floor of the Nigerian Stock Exchange (NSE) as at 31st December 2017. The population is contained in Table 1.

Table 1
Population of the Study

S/N	FIRM
1	AFRIK PHARMACEUTICAL PLC
2	EKOCORP PLC
3	EVANS MEDICAL PLC
4	FIDSON HEALTH PLC
5	GLAXO SMITHKLINE CONSUMER NIG PLC
6	MAY AND BAKER NIGERIA PLC
7	MARISON INDUSTRIES PLC
8	NEIMEITH INTERNATIONAL PLC
9	NIGERIAN-GERMAN CHEMICAL PLC
10	PHARMA-DEKO PLC
11	UNION DIAGONISTIC AND CLINICAL SERVICES PLC

Source: www.nse.com.ng,2018

The judgemental sampling technique was adopted. The availability of trend records was applied on the population as a filter, resulting to the sample size of seven (7) pharmaceutical firms. The sampled firms are presented in the Table 2.

Table 2
Sample of the study

S/N	FIRM
1	EKOCORP PLC
2	FIDSON HEALTH PLC
3	GLAXO SMITHKLINE CONSUMER NIG PLC
4	MAY AND BAKER NIGERIA PLC
5	MARISON INDUSTRIES PLC
6	NEIMEITH INTERNATIONAL PLC
7	PHARMA-DEKO PLC

Source: Generated from Table 1

Secondary data were obtained from the published annual reports of the sampled firms, via their respective websites, for a six-year period from 2012 to 2017. Data collected include audit fee paid, total asset, total liabilities, profit after tax, shareholder's funds, inventory and receivables. The definition and measurement of variables used for the study is presented in Table 3.

Table 3
Variables Definition and Measurement

S/N	Variables	Definition	Measurement
Dependent Variable:			
1	Audit Fee (AUDFEE)	This is the amount paid to the auditor or audit firm services rendered to the audit client [50].	Logarithm of Audit Fees charged by and paid to the auditor for an audit service.
Independent Variables (Audit client characteristics):			
1	Firm Size (FSIZE)	It is defined as the total turnover and quantity of commonly owned assets of the firm [31].	Logarithm of total asset.
2	Profitability (PRFT)	It is defined as the total turnover and quantity of commonly owned assets of the firm [31].	Profitability is proxied by Return on equity (ROE) = Profit After Tax / Shareholder's Equity.
3	Debt Level (LDBT)	This is the level which indicates the extent with which the audit client uses and is able to repay its debt [13].	Total Liabilities / Total Asset.
4	Inherent Risk (IRISK)		[Inventory + Receivables] / Total Assets.

The study adopted descriptive statistics, correlation and multiple regression techniques as tools for data analysis. This model for the study is specified as:

$$AUDFEE_{it} = \alpha_{it} + \beta_1 FSIZEit + \beta_2 PRFT_{it} + \beta_3 LDBT_{it} + \beta_4 IRISK_{it} + \varepsilon_{it} \quad (1)$$

where:

AUDFEEit = Audit fee of firm i for time period t;

α_{it} = Constant/intercept (that is, the fixed audit costs component) of firm i for time period t;

$\beta_1 - \beta_4$ = Coefficients of explanatory variables;

$FSIZE_{it}$ = Size of firm i for time period t;

$PRFT_{it}$ = Profitability of firm i for time period t;

$LDBT_{it}$ = Level of debt of firm i for time period t;

$IRISK_{it}$ = Inherent risk of firm i for time period t; and

ε_{it} = Error term of firm i for time period t.

3. Results

3.1 Descriptive Statistics

The descriptive statistics of the dependent and independent variables respectively are contained in Table 4. The table presents the mean, standard deviation, minimum, maximum, skewness and kurtosis of the variables in the study are shown.

Table 4
Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
AUDFEE	42	15.7194	0.72098	14.5087	17.1477	0.225067	2.358936
FSIZE	42	22.2334	1.24883	19.8387	24.1612	-0.30982	2.341646
PRFT	42	0.01046	0.24753	-0.54772	0.78537	-0.09871	5.00025
IRISK	42	0.31363	0.18345	0.10056	0.76083	1.12441	3.44903
LDBT	42	0.46587	0.17179	0.00056	0.67202	-0.9795	3.441031

Source: STATA 13.0 Output 2018.

Table 4 shows the mean AUDFEE for the sampled firms during the period of study as 15.7194 with standard deviation of 0.720976. This indicates that there is a large variation of 72.1% in AUDFEE paid by the sampled listed pharmaceutical firms in Nigeria during the period. This is also shown by its kurtosis of 2.3589 and skewness of 0.22251, an indication that AUDFEE data falls on the right hand side of the normal curve. The table also shows minimum and maximum values of AUDFEE as 14.5087 and 17.1477 respectively, resulting to a range of 2.63905.

In respect of FSIZE, the average value shown is 22.2334 with a standard deviation of 1.24883 and a minimum value and maximum value of 19.83871 and 24.16118 respectively. This shows that there is high variation of 124.9% in the values of total asset acquired by the sampled firms as indicated by the standard deviation value and a range of 4.32247. FSIZE also has a kurtosis of 2.3416 and a skewness of -0.3098, which shows that its data fall on the left hand side of the normal curve. Also, Table 4 indicates an average PRFT of 0.0104624 and a standard deviation of 0.2475255 with a minimum of -0.5477223 and a maximum of 0.7853719, which results to a range of 1.330942. The standard deviation indicates a considerable dispersion of profit values for the sample from the mean which indicates that there is a big difference of 24.75% in profitability among the sampled listed firms. PRFT also has a kurtosis of 5.00025 and a skewness of -0.0987, an indication that its data falls on the left hand side of the normal curve.

In addition, Table 4 shows the mean IRISK for the sampled firm is 0.3136335 with a standard deviation of 0.1834525 which implies that the inherent risk faced by the sampled firms varies to the tune of 18.34%. The table also showed a minimum and maximum values of 0.1007574 and 0.7608646 resulting to the range of 0.6601072, with a kurtosis of 3.4490 and skewness of 1.1244. This is an indication that the data for IRISK falls on the right hand side of the normal curve. The data for LDBT as shown in Table 4 has the mean value of 0.4658743 and a standard deviation of 0.1717871 with a minimum and maximum value of 0.0005631 and 0.6720219. This indicates the different levels of debt employed by the sampled firm. LDBT also has a kurtosis of 3.4410 and skewness of -0.9795, which is an indication that data for LDBT falls on the left hand side of the normal curve.

3.2 Correlation

The result of the correlation among variables of the study is presented on Table 5. It is based on the significance level of 5%.

Table 5 presents the correlation among the variables of the study. The table shows that there is a significant positive correlation between FSIZE and AUDFEE, which is explained by the positive coefficient of 0.9109 and is statistically significant at 0.0%. This implies that FSIZE and AUDFEE directly correlated such that a unit increase in FSIZE leads to 91.09% increase in AUDFEE. Similarly, PRFT has a positive and significant correlation with AUDFEE as seen by the coefficient of 0.3461, which is statistically significant at 2.47%. It also has a positive significant correlation with FSIZE at the coefficient value of 0.5487 and at 0.02% level of significance. This implies that PRFT has a direct

influence on AUDFEE, such that as PRFT increases by a unit, it causes AUDFEE to increase to the extent of 34.61%.

Table 5
Correlation Matrix

Variable	AUDFEE	FSIZE	PRFT	IRISK	LDBT
AUDFEE	1.0000				
p-value					
FSIZE	*0.9109*	1.0000			
p-value	*0.0000**				
PRFT	*0.3461*	*0.5487*	1.0000		
p-value	*0.0247**	*0.0002**			
IRISK	*0.4715*	0.2308	-0.1337	1.0000	
p-value	*0.0016**	0.1415	0.3988		
LDBT	0.0529	0.0875	-0.0588	0.1781	1.0000
p-value	0.7393	0.5816	0.7114	0.2591	

Source: STATA 13.0 Output, 2018.
* P-Values significant at less than 0.05 level of significance.

In the same manner, IRISK has a positive and significant correlation with AUDFEE. However, IRISK has an insignificant positive correlation with FSIZE as well as a negative insignificant correlation with PRFT. These are at correlation coefficients of 0.4715, 0.2308, and -0.1337, as well as at 0.16%, 14.15% and 39.88% levels of significance respectively. This implies that IRISK significantly influences AUDFEE directly, while it has a direct but insignificant influence on FSIZE. On the other hand, the result implies that IRISK has an inverse relationship with PRFT, which means that as IRISK increases by a unit, AUDFEE increases by 47.15% and PRFT reduces by 13.37%. Furthermore, LDBT shows an insignificant positive relationship with AUDFEE, FSIZE, and IRISK at the coefficient values of 0.0529, 0.0875, and 0.1781, which are at a significance level of 73.93%, 58.165 and 25.91% respectively. This implies that LDBT has an insignificant influence on AUDFEE, FSIZE and IRISK to the tune of 5.29%, 8.75% and 17.81% respectively. However, LDBT has an insignificant negative relationship with PRFT as explained by the -0.0588 coefficient and the significance level of 71.14%. This implies that an increase in LDBT leads to an insignificant increase in AUDFEE to the extent of 5.29%; and an inverse movement in PRFT of 5.88%.

3.3 Diagnostic Tests

Three diagnostic tests were conducted to ascertain the fitness of the models of the study. These are tests for normality of data, multicolinearity, and heteroscedasticity. In Furthermore, the Hausman specification as well as random effect tests were conducted to determine the most appropriate regression for the data collected.

3.3.1 Data normality test

The Shapiro-wilk test for data normality was conducted to test the null hypothesis that data for the variables of the study are not normally distributed, at 5% level of significance. The result of the test was shown in Table 6.

Table 6 shows that AUDFEE has the Z test coefficient of 0.54, which is insignificant at the p-value of 0.29449. However, FSIZE, PRFT, IRISK, and LDBT has the Z score of 2.167, 3.068, 3.616, and 2.95, which are significant at 1.51%, 0.11%, 0.02%, and 0.16% levels of significant. This study therefore,

accepts the alternative hypothesis that data for AUDFEE is normally distributed as well as accepts the null hypotheses that data for FSIZE, PRFT, IRISK, and LDBT are abnormally distributed. This abnormality calls for a more generalized regression analysis for fitted values of AUDFEE.

Table 6
Result of Data Normality Test

Variable	Obs.	W	V	Z	Prob>z
AUDFEE	42	0.96853	1.292	0.54	0.29449
FSIZE	42	0.93298	2.792	2.167	0.01511
PRFT	42	0.89578	4.278	3.068	0.00108
IRISK	42	0.86485	5.547	3.616	0.00015
LDBT	42	0.90143	4.046	2.95	0.00159

Source: STATA 13.0 Output, 2018.

3.3.2 Test for multicolinearity

To check for the presence of multicollinearity among explanatory variables, the variance inflation factor (VIF) test was conducted. It is expected that the VIF for all independent variables should be less than 5, while their tolerance levels should be greater than 0.10.

Table 7
Result of Multicollinearity Test

Variable	VIF	1/VIF
FSIZE	1.67	0.600141
PRFT	1.6	0.623236
IRISK	1.2	0.835529
LDBT	1.04	0.959597
Mean VIF	1.38	

Source: STATA 13.0 Output, 2018.

Table 7 shows that FSIZE, PRFT, IRISK, and LDBT has the variance inflation factors (VIFs) of 1.67, 1.6, 1.2, and 1.04 as well as the tolerance levels of 0.600471, 0.623236, 0.835529, and 0.959597 respectively. The result also shows the mean VIF of 1.38. In the case of each explanatory variable, the VIF is less than 5 and the tolerance level is greater than 0.10. Thus, the study concludes that there is absence of perfect multicollinearity among independent variables of the study, indicating the fitness of the data.

3.3.3 Tests for heteroscedasticity, Hausman specification, and random effect

The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was conducted to test was conducted to test the null hypothesis that there is presence of heteroscedasticity among the standard errors of the data variables at 5% level of significance.

Table 8
Results of Hettest, Hausman Specification and Random Effects Tests

Test	Statistic	P-value
Hettest	**0.75**	**0.3879**
Hausman Specification Chi^2	**6.22**	**0.1834**
Random Effect Chi^2	**13.08**	**0.0001**

Source: STATA 13.0 Output, 2018.

Table 8 shows the hettest chi^2 of 0.75, which is insignificant at the p-value of 0.3879. Thus, the alternate hypothesis, which says there is absence of heteroscedasticity among the data values for FSIZE, PRFT, IRISK, and LDBT is accepted, while the null hypothesis that there is presence of heteroscedasticity among the data values is rejected. In spite of the absence of heteroscedasticity among variables of the study, the abnormality of data for explanatory variables requires a more generalized least square regression analysis, which has fixed and random effects. The result in Table 8 shows the result of Hausman fixed – random specification as having the Chi^2 of 6.22, which is insignificant at the p-value of 0.1834. This indicates that random effect regression analysis was suitable for the study. This is further confirmed by the result of the random effect statistics, which shows the Chi^2 of 13.08, which is significant at the p-value of less than 1%.

3.4 Regression Results

The result of the generalized least square regression is presented in Table 9. It contains the coefficients z-tests and their p-values.

Table 9
Generalized Least Square Regression Result

Variable	Coefficient	Z	P-value
CONST	4.383084	2.96	0.003
FSIZE	0.5128868	7.64	0.000
PRFT	-0.1988165	-1.47	0.142
IRISK	0.4603833	1.36	0.173
LDBT	-0.4007169	-2.62	0.009
Adj. R Sq		0.8946	
Wald Chi Sq.		72.52	
Prob>Chi Sq		0.0000	

Source: STATA 13.0 Output, 2018.

Table 9 shows the coefficient of the CONST as 4.383084, which determines the value of AUDFEE when there is a unit increase or decrease in any of the independent variables, while all others are held constant. The Z statistic of the CONST is 2.96, which is significant at less than 1% (p-value = 0.003). FSIZE has a coefficient of 0.5128868 and the Z value of 7.64 and p-value of 0.000. This indicates that FSIZE significantly and positively affect AUDFEE at more than 99% confidence level, to the extent of 51.29%. This implies that an increase in the size of the sampled firms leads to higher audit fees charged. In the same vein, although LDBT has a coefficient of -0.4007169 and the Z test value of -1.79, this was significant at the p-value of 0.009. This implies that LDBT is negatively but significantly affects AUDFEE at 99.1% confidence level. This means an increase in the level of debt of the sampled firms leads to a significant decrease in audit fee paid up to 40.07%.

However, PRFT has the coefficient of -0.1988165 and the Z statistic of -1.47, which is insignificant at the p-value of 0.142. This implies that PRFT insignificantly and negatively affects AUDFEE at 85.8% confidence level, which indicates that as the profitability of the sampled firms rises, it leads to an insignificant decrease in audit fees paid by 19.88%. Similarly, Table 9 shows that IRISK has a coefficient of 0.4603833 with a z-value of 1.36 and p-value of 0.173. This implies that IRISK is positively but insignificantly affects AUDFEE at the confidence level of 82.7%, which means an increase in internal risk of the sampled firms leads to an insignificant increase in the audit fees paid to the extent of 46.04%.

Furthermore, Table 9 presents the overall result for fitted values of AUDFEE. It shows that variation in AUDFEE to the tune of 89.46% are explained by audit client characteristics proxied by

FSIZE, PRFT, IRISK, and LDBT, while 10.54% is explained by other audit client characteristics not considered in this study. This is evident in the adjusted R^2 of 0.8946. Moreover, the table shows the Wald Chi^2 of 72.52, which is significant at the p-value of 0.0000. This implies that audit firm characteristic measured in terms of FSIZE, PRFT, IRISK, and LDBT collectively has a significant effect on the audit fees paid at more than 99% level of confidence.

3.4.1 Test of hypotheses

Based on specific objectives of the study, four hypotheses were formulated:

i. Firms' size is not a significant determinant of audit fees paid by listed pharmaceutical firms in Nigeria;
ii. Profitability of listed pharmaceutical firms in Nigeria does not significantly affect their audit fees;
iii. Internal risk has no significant relationship with audit fees of listed pharmaceutical firms in Nigeria; and
iv. Levels of debt does not significantly determine audit fees expenditure of listed pharmaceutical firms in Nigeria.

The regression result in Table 9 shows that firm size (FSIZE) has the Z statistic of 7.64, which is significant at the p-value of 0.000; profitability (PRFT) reports the Z coefficient of -1.47 and it is insignificant at the p-value of 0.142; internal risk (IRISK) has the Z value of 1.36, which is insignificant at the p-value of 0.173; and level of debt (LDBT) has the Z statistic of -2.62, which is significant at the p-value of 0.009. This shows that FSIZE and LDBT significantly affect AUDFEE, while PRFT and IRISK exhibit an insignificant effect on AUDFEE. Therefore, the study accepts the alternate hypotheses that firms' size and levels of debt are significant determinants of audit fees in listed pharmaceutical firms in Nigeria and rejects the null hypotheses that firms' size and levels of debt are not significant determinants of audit fees in listed pharmaceutical firms in Nigeria. However, the study accepts the null hypotheses that profitability and internal risk does not significantly determine the amount of audit fees in listed pharmaceutical firms in Nigeria and rejects the alternative hypotheses that profitability and internal risk significantly affect the amount of audit fees in listed pharmaceutical firms in Nigeria. Specifically, the findings of the study include that:

i. Audit client size has a significant positive effect on the audit fees of the listed pharmaceutical firms in Nigeria during the period of study. This implies that as the sampled pharmaceutical firms increase in size as measured by its total asset, the number of audit task to be carried out increases as well as audit time spent. This, by implication, leads to an increase in the audit fees charged by auditors and paid by audit clients. This result is consistent with the findings of [31-35,38], who also found a significant relationship between audit client's size and audit fees.
ii. Audit client profitability has an insignificant negative effect on the audit fees of the sampled pharmaceutical firms in Nigeria for the period under study. This implies that a decrease in the sampled firms profit serves as an indication of inefficiency in the management of available resource. This signals to the auditor the need to carry out an indebt examination of the books of account of the sampled firm in order to identify the relative cause of such fall in profitability, leading to an increase in time and task to be undertaken by the auditors. This increases the audit fees to be paid. This finding agrees with that of [32,33,38], who also found

an insignificant negative relationship between profitability and audit fees. However, this finding contradicts that of [34,35], who found that profitability significantly determines audit fees.

iii. Audit client's inherent risk has a positive insignificant effect on audit fees of the sampled pharmaceutical firms in Nigeria for the period under study. This implies that less material misstatement and errors or omissions in the accounts of sampled firms will result to a reduction in the risk of future litigation to be faced by the sampled firms. This by implication will increase the extent to which the auditor will rely on the assurance provided by the internal control system and reduce the extent of examination to be undertaken; reducing the amount charged as audit fees. This finding disagrees with the finding of [34 & 38], who found a significant relationship between risk and audit fees. On the contrary, the findings agree with the result of [32], who also found a positive relationship between audit client risk and audit fees.

iv. Audit client's level of debt has a significant negative effect on the audit fees of the sampled pharmaceutical firms in Nigeria for the period under study. This implies that reducing the level of debt of the sampled pharmaceutical firms leads to an increase in the audit fees paid. This finding is inconsistent with that of [31], who found that leverage is positively related to audit fees.

4. Conclusions

Sequel to the findings reached, the study concluded that key determinants of the amount of audit fees paid by listed pharmaceutical firms in Nigeria include firm size, which is always considered from the view point of total asset possessed, as well as the level of debt, which is considered from the premise of the proportion of assets financed by debt. On the other hand, the study concludes that, although inherent risk and extent of profit generation plays a role in the determination of audit fees paid by listed pharmaceutical firms, their impact is insignificant.

Based on the findings and conclusions reached, the study therefore recommends that management of listed pharmaceutical firms in Nigeria should be proactive in efficient management of assets to ensure full utilization, accurate valuation and reporting. This will eliminate incidences of giving wrong impressions to auditors regarding assets mismanagement that would serve as the basis of increasing the amount of audit fees charged by statutory auditors. In addition, the study recommends that the management of these firms should maintain the optimum level of debt and ensure that such debt collected are fully utilized on profitable investment that will increase profitability. Considering the insignificant effect of profitability and inherent risk, the study recommends that management of listed pharmaceutical firms should adopt modern and effective production strategies such as just-in-time (JIT) technique to cut off irrelevant costs of production and increase quality of products. These will contribute to growth of the firm as well as reduce reports of losses to discourage further probing by auditors that would require additional fees.

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