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CORPORATE RESPONSIBILITY ACCOUNTING CULTURE AND RETURN ON EQUITY OF SELECTED LISTED COMPANIES IN NIGERIA

AGUGUOM, T. A.
Department of Accounting and Finance, Faculty of Humanities, and Social Sciences,
Augustine University, Ilara- Epe-Lagos
Nigeria

TUOYO, C. A.
Department of Accounting and Finance, Faculty of Humanities, and Social Sciences,
Augustine University, Ilara- Epe-Lagos
Nigeria

OLANIPEKUN, E.
Department of Accounting and Finance, Faculty of Humanities, and Social Sciences,
Augustine University, Ilara- Epe-Lagos
Nigeria

AND

OLADELE, S.O.
Department of Accounting and Finance, Faculty of Humanities, and Social Sciences,
Augustine University, Ilara- Epe-Lagos
Nigeria

Abstract

Structuring activities into responsibility centers, autonomy, and optimization of resources is a priority in meeting investors' performance and return on equity expectations. Studies have shown that meeting these expectations of adequate performance, evaluation models and acceptable reward systems have been complex and multifaceted. Inconsistencies and inclusiveness have prevailed in reported studies, in contributing and expanding the frontiers, this study investigated the effect of corporate responsibility accounting culture on return on equity (ROE) of selected listed companies in Nigeria. Ex-post facto research design was adopted. The population consisted of 173 quoted companies in Nigeria as of 31st December 2020. Twenty companies were purposively selected for a period of 10 years (2011-2020). Validity and reliability of the data were premised on the scrutiny of financial statements of the companies by the external auditors. Descriptive and inferential panel data regressions were used to analyze the data. The study revealed that the return on equity of listed companies in Nigeria was significantly affected by responsibility accounting, (AdjR^2=0.0465; F-Sat. =5.611; p-value =0.000). Introduction of control variables revealed a stronger effect, corporate responsibility accounting with leverage and firm

size exhibited a positive effect on ROE, (AdjR^2=0.0993; F-Sat. = 4.982; P-value =0.000. It concluded that corporate responsibility accounting had a positive significant effect on the ROE of selected listed companies in Nigeria. The study recommended that management should ensure

adequate and result-oriented delegation, activity-based costing, achievable project budgeting, and cross-functional teams, and an adequate performance evaluation model towards achieving corporate objective that would influence better ROE.

Introduction

The global trend of business growth has necessitated the relevance of corporate responsibility accounting culture in all business operational activities. Responsibility accounting is the act of attributing role or activity to an individual or a unit of individuals in order to produce expected result in the attributed role or line of activity. Investing in business is a risk. Investors would rather take calculated risks for expected returns and put their wealth in a business whose management is very responsible, evidenced in how they account for what happens in the business. According to Chartered Institute of Management Accountant CIMA (2015) responsibility accounting is an accounting system whereby revenue and costs are segregated into responsibility units for management performance evaluation of persons designated with authority to see how well they have carried out the responsibility accorded them.

Adegbie, Urewa and Owolabi (2020) opined that responsibility accounting most especially from a decentralized business setup could be referred to as activity accounting as it is the tool used in measuring, evaluating and monitoring performance against expectation in such business organizations. Corporate responsibility accounting culture deals with the managerial decision of structuring business activities into responsibility centers (such as cost and activity centers), creating autonomy and the equitable allocation of

resources to meet performance and investors' expectation.

The primary motive of every business venture is to have returns and economic value from investments, thus only activities that could lead to the generation of profit that can guarantee the continuous existence and survival of the organization (Umobong, 2015). Return on equity is the profit or loss generated by a business in any particular year. It could be otherwise referred to as profitability. Return on equity parameters are metrics used to measure how profitable a business is or has been. Since the existence of business depends so well on its ability to make profit, Abebe and Abera (2019) is of the opinion that a positive return on equity is an indicator that a company is doing well and is likely to continue into the foreseeable future. Basically, profitability as reflection of productivity is good measure and a tested indicator to ascertain the realization of the set objective of organizations (Adebbie, Olusanjo & Olaoye, 2018).

Return on equity performance indicators, includes all profitability elements (revenue, cost, and investment) Mojgan, 2012). There is a relationship between Responsibility accounting and return on equity Mohammed, Abdul-rahman, Mahmoud and Atala (2014), opined that there is need to decentralize business control through delegation of duties to managers; saddling them with the responsibilities of taking decisions and to be held responsible for the decision taken, monitoring and evaluating cost or activity

centers to ensure return investment. If duties are not delegated, activities will be unchecked and are bound to go out of control leading to negative impact on a business return on equity

Statement of Problem

Systemic problems abound in the application of responsibility accounting. However, Pandey (2011) noted that it is a consequence of managerial conflict of interest problem perspective causing the ethical dilemma. Nguyen, Nguyen and Pham (2019) revealed that management decentralization, division of organization into responsibility centers, cost and income allocation, estimation and reality evaluation, reporting, reward, legal environment and business characteristics are the factors that affect the performance of animal feed processing enterprises. It could therefore be deduced that, depending on the operation characteristics of the organization the factors affecting responsibility accounting vary.

Commenting on return on equity, it has been observed that in recent times, return on equity (ROE) has become an impossible target in the wake of new technology development which some of the managers cannot meet.

This is reflected in the dwindling return on equity of the organizations, as an indicator of profitability performance, showing the managers inability to create wealth for the owners and meeting the expectation of equity investors. Although managers could be held responsible for the responsibilities under their control, however, the managers do not have direct control over uncontrollable costs and also over the shareholders' wealth, yet, their actions influence the drivers of the shareholders' wealth creation. Consequently, there is a

need to identify measures of performance that are related to shareholders like net profit before tax (NPBT) as one of the evidence of optimal use of corporate resources.

Justification for the study

Fakir, Islam and Miah (2014); Machdar (2019); Rani and Rani (2015) and Pajrok (2016) studies on responsibility accounting have been inconclusive and controversial and no consensus has been reached, especially the impact of responsibility accounting on profitability. However, Yisa, Ishola and Folajimi (2020); Adegbie, Urewa and Owolabi (2020); Nguyen, Nguyen and Pham (2019); Tanmay, (2017), have shown that corporate responsibility accounting has positive influence on return on equity.

Yisa *et al;* (2020), posited that, when organizations adopt a strong and effective decentralization where managers of cost units and cost centers are held responsible for their actions, this influences resource management which in turn reflect on return on equity. On the contrary, some studies found no relationship between responsibility accounting and return on equity (Fowzia, 2011; Nguyen, 2020).

Fowzia (2011) posited that irrespective of decentralization some managers' still exhibit high level of incompetence and inability to optimally utilize the corporate scarce resources. Consequently, there seem to be inconsistencies in results and divergent opinions of the effect of responsibility accounting on Return on equity, thereby creating gaps for further study to establish the effect of responsibility accounting on return on equity In filling this gap and in extending the frontiers in literature, this

study hereby proposed the following research objective, research question and hypothesis as follow;

Objective of the Study: Determine the effect of responsibility accounting on equity in selected listed companies in Nigeria;

Research Questions: How does responsibility accounting affect return on equity in selected listed companies in Nigeria?

Hypothesis: Responsibility accounting does not significantly affect return on equity in listed companies in Nigeria.

The rest of the study is structured in this manner: Section 2 considers the literature review from the viewpoints of conceptual, theoretical and empirical review. In section 3, the methodology, measurement of the variables, and specification of the model were considered. While Section 4 of the study presents the data analysis, results and discussion of findings, section 5 concludes the study with relevance recommendations.

Review of related literature
Independent Variable
Corporate *Responsibility Accounting Culture*

Responsibility accounting culture is the collection, summarization and reporting of financial information about various decision centers (responsibility centers) throughout an organization in line with the industrial culture (Fakir, Islam & Miah, 2014). It is also referred to as activity accounting or profitability accounting (Dater & Rajan, 2018). According to Owino, Munene and Ntayi (2017), responsibility accounting is an administrative accounting method which deals with costs and revenue performance, used in measuring the results of all

responsibility centers where performance of the managers are evaluated based on activities under their control. Generally, there are many views about the responsibility accounting system, according to different objectives, professional, researchers or administrators in different establishments. Each considers the concept from a different angle, however, there is no unified concept of responsibility accounting (Trans, 2017).

According to Datar and Rajan (2018), responsibility accounting could be referred to as profitability accounting or activity accounting. Furthermore, Atu, Ogbeide, Agbo and Clement (2014) perceive Also perceive responsibility accounting as profitability or activity base accounting where managers are given autonomy and the performance is managed and evaluated through an autonomous process. It could therefore be deduced that responsibility accounting is a system of business where performance is decentralized to managers as subunits in the business to take charge by planning, implementing, directing and controlling the activities of the unit to achieve the business goals (Adegbie and Olaoye, 2018).

Similarly, Fowzia (2011) stated that responsibility accounting is a management control system designed to make various responsibility managers accountable based on the principles of delegation and the location of their responsibility. Authority and responsibility is based on responsibility centers.

The Corporate responsibility accounting culture proxies considered in this work are Fixed Costs of Cost Centers (FCCC), Overhead Costs of Centers (OHCC), Cost of Abnormal Losses (CAL) and Centers Revenue to Total Revenue (CRTR)

Fixed Costs of Cost Centers (FCCC)

The term fixed cost of a cost center refers to a cost that does not change with an increase or decrease in the number of goods or services produced or sold. Fixed costs are expenses that have to be paid by a company, independent of any specific business activities. This means fixed costs are generally indirect, in that they don't apply to a company's production of any goods or services.

Overhead Costs Centers (OHCC)

According to Sormin (2020), overhead cost centers are the units or centers solely responsible for costs attributable to the running of the business. All costs non-attributable to fixed costs are considered and handled by this unit. It is considered with the allotment to two or more cost centers of proportions of the common items of cost on the estimated basis of benefit received. Common items of overheads are rent and rates, depreciation, repairs and maintenance, lighting, works manager's salary (Stobierski, 2021).

Cost of Abnormal Losses (CAL)

Abnormal loss refers to a situation when a company experiences a loss that exceeds the normal loss allowance. Abnormal Losses may arise due to mishap, mischief and inefficiency. This loss is not natural and can be avoided with proper care. Corporate organizations exercise caution to reduce avoidable losses and this requires delegating job functions to the right personnel and competent staff to avoid unnecessary wastages. The aggregate sum and value of abnormal losses are capable of eroding the profitability of the organization.

Centers Revenue to Total Revenue (CRTR)

Center revenue is the revenue generated by a particular activity center or sub business unit in any particular period. This revenue can be compared with the total revenue generated by the entire business units to arrive at the ratio contributed by the center to the overall revenue that accrued to the business in that period (Stobierski, 2021). The revenue centers consider the corporate revenue arising from the units.

Dependent Variable
Return on equity

The concept of return on equity is aimed at measuring the results of the overall performance in terms of profitability of the company. It is also used to evaluate management's performance and equally reveals the effectiveness in which the business makes use of the equity and what is due to the equity providers periodically. Mita, Silalahi and Halimatussadiah (2018) speculated that return on equity (ROE) is the measure used in evaluating the shareholders' earnings power from the book value of their investment and is frequently used in comparing two or more companies in an industry. Return on equity measures the proportion or percentage of sales revenue earned as profit after deducting all expenses. The operational performance of a business should be considered from the perspective of net profit and not on gross profit margin.

Return on equity could be termed as the ability to make a profit from all the business activities of an organization, company, firm, or an enterprise attributable to equity investors. It reveals how efficiently the management can make a profit by using all the resources available in the market towards meeting the reward expectation of the business owners. However, Harward and

Upton (1961) postulated that profitability is the ability of a given investment to earn a return from its use but that profitability is not synonymous to the term efficiency, rather profitability is an index of efficiency to guide management for greater performance. Return on Owner's Equity Ratio is a single most important ratio for judging the profitability of an organization in terms of return to the owners. This ratio reflects how much the firm has earned on the funds invested by the shareholders (Either directly or through retained earnings). Earnings on equity measure also relate earnings for equity holders (that is profit after tax and preference dividend) to the number of equity shares in issue. Following the study of Gaio and Raposo (2011) in the measurement of return on equity, this study measures return on equity as ROE = Profit after tax less preference dividend divided by net worth or equity x 100.

The essence of this variable is to ascertain profit available after considering all the direct costs, overheads, and other operating expenses and evaluate the level of competences and efficiency of managers in managing various investment centers based on the decentralization policy in companies implementing responsibility accounting. The studies of Zahoor, Huma, Bader and Muhammad (2015); Zhai and Wang (2016) opined that net profit before tax as profitability performance indicator should be clearly differentiated between the performance of the managers and that of the division. Eliwa (2015) measured net profit before tax (NPBT) in her studies. This study adopts from their studies and intends to measure net profit before tax as NPBT = Log of net profit before tax (absolute figure) from the financials of the companies to be used for this study.

Control Variables
Firm Size (FMZ)

This is the natural log of the companies' total assets employed within the period under consideration. In some prior studies (Gaio and Raposo, 2011; Hribar & Nichols, 2007; Dwi-Lusi, 2013), firm size was used as a control variable. Firm size has been identified as an important determinant of firm valuation (Gaio et al, 2011). While Hribar and Nichols (2007) argued that firm size has the capacity to capture business diversification in larger firms such that asset utilization and association with total accruals might differ due to economies of scale. Earlier research works have found indication that firm valuation is positively related to growth opportunities.

Following literature, this study adopted the study of Dwi-Lusi (2013) and measured firm size as the log of total assets of the sampled companies.
Firm Size (FZ) = Log of Total Assets (Absolute Figure)   Equation (3.9)

Leverage (LEV)

Leverage is the measure of the percentage formation of the capital structure financing the total assets employed within the period under consideration over the total equity of the companies.

Sormin (2020) posited that Leverage is a ratio used to measure the extent to which a company's assets are financed by debt, one of which is measured by DAR (Debt to Asset Ratio). It is also a debt ratio that is used to measure the ratio between total debts to total assets, meaning how much the company's assets are financed by company debt. The higher the debt of a company, the higher the interest expense

that will be incurred by it and that will ultimately reduce the company's profits.

The study of Hamidzadeh and Zeinali (2015) employed leverage as a control variable. This study adopted and measured leverage as used by Hamidzadeh and Zeinali (2015) as follows:

Leverage (LEV) = $\dfrac{\text{Total Liabilities}}{\text{Total Assets}}$

Theoretical Review

This section of the study shows the theoretical assumptions and foundation used for the study.

Agency Theory

The concept of agency theory was postulated by Berle and Means (1932) who argued that due to a continuous dilution of equity ownership of large corporations, ownership and control become more separated. Jensen (1976) opined that this situation gives professional managers an opportunity to pursue their interests instead of that of shareholders. That the issue of agency theory revolves around the subject matter of agency problems and its possible solutions.

The responsibility of running and managing the company will be with the managers on behalf of the shareholders. In any business contract, there is the possibility that conflict may arise especially when the owner is different from the day to day running and management of the company. The conflict could come in various ways: Conflict of interests, payment terms disagreements, dividend policy issues and many more.

The Agency theory posits that there is a relationship between the principal (shareholders) and the agent of the principal (company's managers). This suggests that the firm can be viewed as a nexus of contracts (loosely defined) between resource holders. Panda and Leepsa (2017), stated that An agency relationship arises whenever one or more individuals, called principals, hire one or more other individuals, called agents, to perform some services and then delegate decision making authority to the agents. This study investigates the effects of responsibility accounting on the profitability of the listed companies in Nigeria, relating to the investors in this case, as the principal and the managers other employees as the agents. The investors voluntarily gave power to the managers to manage the resources on behalf of the investors.

The idea of agency theory in terms of interests, separation of ownership from control, different kinds of information asymmetry and moral hazards, managing of resources and ownership control and managerial function is, therefore, relevant and related to this study.

Profitability Theory

Hifza (2011) averred that profitability was said to have been developed and used by American Economist, Francis Walker in the year 1900. Profitability studies classify measures and assess the performance of the firm in terms of the profits it earns with regards to the shareholders' investment or capital employed in the business...

Further explained that most investors only invest in the returns and the profit that the investment yields, therefore profitability could be used as a measure of the success of an investment. Furthermore, profitability is the business' ability to create earnings relative to its expenses and other related costs of the business incurred during the relevant period. Therefore, the ability of a company to continue to operate and be in

business largely depends on its ability to generate profit and continue to exist.

Profitability objective is termed as one of the greatest essence of business venture. This study expects that responsibility accounting affects profitability positively. It then suggests that profitability is a performance measure of responsibility accounting. Therefore this study is hanging on the fact that profitability is important and associated with this study.

Accountability Theory

Diamond (1984); Dow and Gorton (1997) averred that some scholars in their research work find that a more liquid market leads to better monitoring of managers as in. Agency theory states the importance of accountability as required from the managers by shareholders. The shareholders expect proper accountability of stewardship of their investment entrusted in the hands of the managers.

Therefore, this theory is very relevant to the study as accountability is important in the operations of the firm by the managers who are to be evaluated and held accountable based on the performance of their responsibility centers. The managers and their subordinates are accountable to the shareholders and other stakeholders based on the delegations of responsibilities, duties and various resources under their control. Therefore accountability theory is considered important and relevant to this study (Diamond, 1984; Dow and Gorton, 1997)

Theoretical Framework and the Methodology
Theoretical Framework

The study reviewed some theories considered related and relevant to the study. However, the study is underpinned on agency theory. Agency theory is chosen to support the study since the theory posited the need for the agents to oversee the running of the business on behalf of the principal. The whole idea and essence of responsibility accounting is to ensure that the agents (managers) optimally utilize the resources of the principal (shareholders) to achieve adequate equity return on equity.

The Methodology
The Data Issues

This study investigated the effect of corporate responsibility accounting culture on return on equity in selected listed companies in Nigeria. The *ex-post facto* research design was adopted. The population was 173 quoted companies on the Nigerian Stock Exchange as of 31st December 2020. Twenty companies were selected using the purposive sampling technique. Data were extracted from published financial statements of sampled companies, covering 10 years 2011 to 2020, giving a total of 200 observations, while the validity and reliability of the data were premised on the scrutiny of the external auditors. Descriptive and inferential panel data regressions were used to analyze the data.

The model specification

$Y = f(XZ)$

Y= **Dependent Variable** = Return on Equity

X= **Independent Variable** = Corporate Responsibility Accounting

Z= **Control Variable** = Leverage and Firm Size

Where

$Y = y_1$,

y_1 = ROE: Return on Equity

$X = x_1, x_2, x_3$

x_1 = FCCC: Fixed Costs of Cost Centers

x_2 = OHCC: Overhead Costs of Centers

x_3 = CAL: Cost of Abnormal Losses
x_4= CRTR : Centers Revenue to Total Revenue
$Z = z_1, z_2$
z_1= LEV: Leverage
z_2= FZ: Firm Size

Functional Relationship
ROE   = f(FCCC, OHCC, CAL, CRTR, LEV, FZ)

Models
$$ROEit = \alpha_0 + \beta_1FCC_{it} + \beta_2OHCC_{it} + \beta_3CRTR_{it} + \varepsilon_{it}$$
Model 1

$$ROEit = \alpha_0 + \beta_1FCC_{it} + \beta_2OHCC_{it} + \beta_3CRTR_{it} + \beta_4LEV_{it} + \beta_5FZ_{it} + \varepsilon it$$
Model 2

A Priori Expectation: The study expects a positive relationship to exist between the dependent variable and independent variables. In this regards also, the study expects that the corporate responsibility accounting (CRA) positively affects return on equity (ROE), with and without the control variables of leverage (LEV) and firm size (FS). Hence, the a priori expectation is represented thus $\beta1 > 0$.

Data Analysis, Results and Discussions of Findings
Descriptive Analysis
Table 4.1: Descriptive Analysis

Variable			N	Min	Median	Max
ROE	Mean	0.385		-2.364	0.114	28.971
	Sd	2.916				
FCCC	Mean	43077.130		365.753	6359.171	438853.000
	Sd	83062.650				
OHCC	Mean	57889.880		525.077	8066.002	558883
	Sd	112324.800				
CRTR	Mean	6297.540		-34601.410	690.411	82839.000
	Sd	15949.310				
LEV	Mean	0.630		0.178	0.659	1.056
	Sd	0.199				
FZ	Mean	9.851		6.461	9.756	15.471
	Sd	2.380				

Source: Author's Computation, 2021. Note:, ROE = Return on Equity, FCCC = Fixed costs of Cost Centers, OHCC = Overheads of Cost Centers CRTR = Centers Revenue to Total Revenue, LEV = Leverage, FZ = Firm Size

Table 4.1 presents the descriptive analysis of the Return on equity and Responsibility Accounting. Return on Equity (ROE) is employed as a surrogate to measure return on equity and Responsibility Accounting (independent variable) are measured using fixed costs of Cost Centers (FCCC), Operating Cost (OHCC) and Centers

Revenue to Total Revenue (CRTR). From the result in the Table 4.1, return on Equity (ROE) ranges within -2.364 and 28.971 with a mean of 0.385 and a standard deviation of 2.916. The median value during the period stood at 0.114. The average value of 0.385 signifies that for every naira of common shareholders' equity the firm generates 0.385 naira of Centers Revenue to Total Revenue.

The Fixed costs of Cost Centers (FCCC) of the firms' ranges between N365.753 million and N438, 853.000 million with an average of N43, 077.133 million and standard deviation of 83,062.647. The average Operating Cost (OHCC) of the firms is N57,889.880 million with minimum and maximum of N525.077 million and N558,883.000 million respectively and standard deviation of 112,311.133. The median value is found to be N8,066.002 which is quite different from the mean value and it depicts that the distribution of the variable is not symmetrical. The Centers Revenue to Total Revenue (CRTR) of the firms ranges within N-34,601.409 million and N82.839.00 million with an average of N6, 297.535 million with a standard deviation of 15,949.310. The Leverage (LEV) ranges between 0.178 and 1.056 with an average of 0.630(±0.199). Also, the average Firm Size (FZ) is 9.851 with standard deviation of 2.380 which ranges between 6.461 and 15.471.

Correlation Matrix

Table 4.2: Correlation Matrix

	ROE	FCCC	OHCC	CRTR	LEV	FZ
ROE	1					
FCCC	-0.1034	1				
	0.3061					
OHCC	-0.1428	0.9006*	1			
	0.1563	0.0000				
CRTR	0.0033	0.8390*	0.7707*	1		
	0.9738	0.0000	0.0000			
LEV	0.3089*	0.2109*	0.3101*	0.0717	1	
	0.0018	0.0351	0.0017	0.4783		
FZ	-0.0225	0.6450*	0.6423*	0.6950*	0.1306	1
	0.8239	0.0000	0.0000	0.0000	0.1953	

Source: Author's Computation, 2021. Note: ROE = Return on Equity, FCCC = Fixed costs of Cost Centers, OHCC = Overheads of Cost Centers CRTR = Centers Revenue to Total Revenue, LEV = Leverage, FZ = Firm Size. P-value below the correlation Coefficient and * represents significance at 5% level.

In the Table 4.2 above, the results of the correlation matrix which is done to check the degree of relationship between dependent variables and independent (control variables inclusive) variables and also within the explanatory (control variables inclusive) variables used in this study. According to the matrix, correlations between Return on Equity (ROE), Fixed costs of Cost Centers (FCCC), Operating Cost (OHCC), Centers Revenue to Total Revenue (CRTR), Leverage (LEV) and Firm Size (FZ) are -0.1034, -0.1428, 0.0033, 0.3089, and -0.0225. ROE and LEV show negative and weak correlations, and FZ also display weak but positive correlation, and FCCC, OHCC and CRTR all show positive and weak correlations.

Furthermore, OHCC and CRTR, LEV and FZ are correlated with coefficient values of 0.901, 0.839, 0.211 and 0.645. Also, CRTR and LEV and FZ have correlations of 0.072 and 0.695. Lastly, LEV and FZ are weakly correlated with coefficient 0.131. In conclusion, the correlations between the dependent and independent variables are averagely low and on the other hand, it seems that independent variables are relatively strongly associated. The associations within the independent variables suggest to us that there may be multi-colinearity problem in the models.

Regression Analysis

The regression results using the Standard panel statistical methodology which involves the pooled (OLS), fixed effect, and random effect regression models for inference are presented in this section. We begin the analysis by estimating ordinary least square (OLS) model. Under this approach, the study assumes that individual-specific effects are not present. However, under random or fixed effect regression models the study assumes that individual-specific effects are present. The panel data offers many advantages that make panel regression approach to give more accurate inference of model parameters. One of the advantages is that Panel data usually contain more degrees of freedom and more sample variability than cross-sectional data, therefore improving the efficiency of parameters (Hsiao *et al.,* 1995).

To obtain valid inference on the models parameters, the study chooses to test for best models using Breusch and Pagan Lagrangian multiplier and Hausman (1978) tests. More specifically, for the panel regression estimator, to choose between Pooled and Random Effect Models the study uses Breusch and Pagan Lagrangian multiplier test for random effects. Using this test Random Effect model is preferred if the null hypothesis is rejected while non-rejection of the null hypothesis indicates the acceptance of Pooled model. However, to choose between Pooled and Random Effect Models the study uses Hausman test. Using this test Random Effect model is preferred if the null hypothesis is rejected while non-rejection of the null hypothesis indicates the acceptance of fixed effect model.

The study estimated two regression equations. That is, one model without control variables and the other one with control variables. This is to say, after a first estimation with only the Responsibility Accounting indicators; Fixed costs of Cost Centers (FCCC), Operating Cost (OHCC) and Centers Revenue to Total Revenue (CRTR) (variable of interest) as a regressor, Leverage and Firm Size are added and by doing these, we observe how the main model react to the addition of the aforementioned control variables.

Effect of corporate responsibility accounting with and without control variable on Return on Equity

$$ROEit = \alpha_0 + \beta_1 FCC_{it} + \beta_2 OHCC_{it} + \beta_3 CRTR_{it} + \varepsilon_{it}$$
$$Model\ 1$$
$$ROEit = \alpha_0 + \beta_1 FCC_{it} + \beta_2 OHCC_{it} + \beta_3 CRTR_{it} + \beta_4 LEV_{it} + \beta_5 FZ_{it} + \varepsilon it \qquad Model\ 2$$

Table 4.3: Panel Data Analyses for Return on Equity (ROE)

VARIABLES	Without Control Variables			With Control Variables		
	(1) Pooled	(2) Random	(3) Fixed	(4) Pooled	(5) Random	(6) Fixed
FCCC	0.032*** (3.097) 0.003	0.028* (1.893) 0.058	0.023 (1.177) 0.242	0.032*** (3.248) 0.002	0.045*** (2.625) 0.009	0.071*** (3.205) 0.002
OHCC	-0.060*** (-5.699) 0.000	-0.044*** (-3.167) 0.002	-0.033* (-1.983) 0.051	-0.034*** (-2.680) 0.009	-0.028* (-1.949) 0.051	-0.033** (-2.120) 0.037
CRTR	0.021*** (3.403) 0.001	0.015* (1.953) 0.051	0.013 (1.451) 0.150	0.030*** (3.823) 0.000	0.022*** (2.862) 0.004	0.015* (1.868) 0.065
LEV				-0.084** (-2.007) 0.048	-0.098** (-1.982) 0.047	-0.142*** (-2.647) 0.010
FZ				-0.026** (-2.445) 0.016	-0.046*** (-3.556) 0.000	-0.092*** (-5.128) 0.000
Constant	-0.260*** (-4.012) 0.000	-0.205** (-2.130) 0.033	-0.166 (-1.222) 0.225	-0.056 (-0.649) 0.518	0.079 (0.645) 0.519	0.393** (2.414) 0.018
Observations	200	200	200	200	200	200
R-squared	0.319	0.076	0.077	0.395	0.260	0.332
Adj. R-squared	0.298		-0.0507	0.363		0.222
F-test	14.99		2.408	12.26		8.463
Prob > F	0.000		0.073	0.000		0.000
Wald-chi2		15.80			32.21	
Prob > chi2		0.001			0.000	
	Breusch and Pagan Lagrangian multiplier and Hausman Test					
LM		19.42 [0.000]			26.17 [0.000]	
Hausman		3.19 [0.363]			3.69 [0.296]	

Source: Author's Computation, 2021. Note: ROA = Return on Equity (dependent Variable), FCCC = Fixed costs of Cost Centers, OHCC = Overheads of Cost Centers CRTR = Centers Revenue to Total Revenue, LEV = Leverage, FZ = Firm Size, t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1

$$ROA_{it} = \alpha_0 + \beta_1 FCC_{it} + \beta_2 OHCC_{it} + \beta_3 CRTR_{it} + \varepsilon_{it}$$
$$Model\ 1$$
$$ROE_{it} = -2.205 + 0.028FCC - 0.044OHCC + 0.015CRTR \qquad Model\ 1$$
$$ROE_{it} = \alpha_0 + \beta_1 COS_{it} + \beta_2 OPC_{it} + \beta_3 NI_{it} + \beta_4 LEV_{it} + \beta_5 FZ_{it} + \varepsilon it \qquad Model\ 2$$

$$ROE_{it} = 0.079 + 0.045FCC - 0.028OHCC + 0.022CRTR - 0.098LEV - 0.046FZ \qquad Model\ 2$$

In this subsection, Return on Equity (ROE) is the dependent variable, Responsibility Accounting indicators; fixed

costs of Cost Centers (FCCC), Operating Cost (OHCC), centers Revenue to Total Revenue (CRTR), Leverage (LEV) and Firm Size (FZ) serve as the independent variables. From the result in the lower portion of Table 4.3, the Breusch and Pagan Lagrangian multiplier (LM) [19.42 (p-value = 0.000); 26.17 (p-value = 0.000)] and Hausman [3.19 (p-value = 0.363); 3.69 (p-value = 0.296)] tests results for both the models without and with control variables show preference for the random effect model. Hence, the random effect results in columns (2) and (5) of the Table 4.3 are interpreted.

Interpretation

In model 1, the estimated coefficients for Fixed costs of Cost Centers (FCCC), operating costs (OHCC) and Centers Revenue to Total Revenue (CRTR) in the relationship between responsibility accounting and return on equity in model 1 indicate that Fixed costs of Cost Centers and Centers Revenue to Total Revenue each has positive signed ($\beta1 = 0.028$; $\beta3 = 0.015$) > 0, this is in tandem with expectation. However, cost of operation is negatively signed ($\beta2 = -0.044$) < 0, this is contrary to expectation.

This means that a unit change in fixed costs of Cost Centers and Centers Revenue to Total Revenue could bring about a change in return on equity by 0.028 and 0.015 respectively, while a unit change in operating cost will lead to a decrease of 0.044 in return on equity. In model 5, the coefficients for Fixed costs of Cost Centers and Centers Revenue to Total Revenue are positively signed ($\beta1 = 0.045$; $\beta3 = 0.022$) > 0, this is in agreement with pre-estimation expectations.

However, estimated coefficients of Overheads of Cost Centers leverage and firm size in relation to return on equity are negatively signed ($\beta2 = -0.028$; $\beta4 = -0.098$; $\beta5 = -0.046$) < 0. These imply that a unit change in fixed costs of Cost Centers and Centers Revenue to Total Revenue will lead to an increase of 0.045 and 0.022 in return on equity respectively, while unit change in Overheads of Cost Centers leverage and firm size will lead to a decrease by 0.028, 0.098 and 0.046 in return on equity respectively. These are contrary to the study expectations. As clearly stated in the models in the preceding chapter, Return on equity (ROE) is examined alongside with the Responsibility Accounting indicators to ascertain whether there is existence of relationships among the selected variables with and without control variables. In other words, the focus of panel data regression analysis is to make inference on coefficients of responsibility accounting indicators before and after controlling the influence Leverage and Firm Size.

In summary, as can be seen in Table 4.3, for models 1 and 2, the results provided robust evidence against the study hypotheses. Also as in the Table 4.3, the Wald-chi2-statistic [Wald-ch2 = 15.80 (P-value = 0.001); Wald-ch2 = 32.21; (P-value = 0.000)] tell us that the models are fit meaning that the explanatory variables explain changes in return on equity (ROA) in both casesHowever, all the results suggest the rejection of the null hypothesis of no significance effect of responsibility accounting on return on equity in listed companies in Nigeria and concludes that there is significance effect of responsibility accounting on return on equity in listed companies in Nigeria

Discussion of Findings

As in the Table 4.3, the Wald-chi2-statistic [Wald − ch2 = 15.80 (P − value =

0.001); Wald − ch2 = 32.21; (P − value = 0.000)] tell us that the models are fit meaning that the explanatory variables explain changes in return on equity (ROE) in both cases. In addition to this claim, R squared results of 0.076 and 0.260 for the models without and with control variables respectively shows that the independent variables explain about 7.6% and 26.0% of variances in the dependent variable. Also, the results show that the coefficient [coefficient = 0.028; P − value = 0.058] of Fixed costs of Cost Centers (FCCC) is positive and statistically significant in the model without control variables at 10% level.

The coefficient [coefficient = 0.045; P − value = 0.058] becomes increasingly positive and highly significant with the inclusion of control variables. These mean that FCCC shows a more positive and highly significant reaction after controlling for Leverage and Firms Size. The coefficient of Centers Revenue to Total Revenue (CRTR) before [coefficient = 0.015; P − value = 0.051] and after [coefficient = 0.022; P − value = 0.004] the addition of control variables is similar to that of FCCC. It actually became increasingly positive and highly significant after the inclusion of leverage and firm size as control variables.

On the contrary, the coefficient [coefficient = - 0.044; P − value = 0.002] of Operating Cost (OHCC) is negative and highly statistically significant in the models without control variables at 1% level. The coefficient [coefficient = - 0.028; P − value = 0.051] becomes decreasingly negative and less significant with the inclusion of control variables.

However, all the results suggest the rejection of the null hypothesis of no significance effect of responsibility accounting on return on equity in listed companies in Nigeria and concluded that there is significance effect of responsibility accounting on return on equity in listed companies in Nigeria. Generally, the findings are in tandem with that of AlMutairi (2011) who found that corporate responsible accounting has significant effect on the return on equity of the Kuwaiti oil companies and it is contrary to the findings of Akenbor and Nkem (2013).

Conclusion and Recommendations
Conclusion: The study investigated the effect of corporate responsibility accounting on return on equity of listed companies in Nigeria. In addressing the problem, the study measured return on equity using return on equity, while responsibility accounting was measured using fixed cost centers (FCC), overhead cost centers (OHCC), and Center revenue to total revenue (CRTR). An augmented variable of leverage and firm size served as the control variable of the study.

Based on the panel data regression analysis carried out, mixed results were obtained: Fixed cost centers revealed a positive effect, overheads cost centers showed negative effect while centers revenue to total revenue exhibited positive significant effect on return on equity, however the joint result revealed that responsibility accounting had a positive effect on return on equity. When the model was augmented with the controlling variables of leverage and firm size, the study revealed that fixed cost centers revealed a positive effect, overhead cost centers revealed negative but significant effects, while centers revenue to total revenue showed positive significant effect. In addition, leverage revealed negative but significant effects, while firm size exhibited negative and significant effects.

Recommendations

Based on the results recorded, the study recommended that management should exercise retraining overheads of the companies, since they are controllable costs and capable of having a negative effect on the profits of the year. The respective cost centers managers are advised to exhibit adequate and effective delegations, working towards the goal congruency objective of the organization.

Managers saddled with the cost center responsibility should optimally put to effective and productive use of the corporate human and capital resources of the organization towards meeting return on equity expectations of the management.

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