EFFECT OF STAFF COST ON PROFITABILITY OF OIL AND GAS FIRMS IN NIGERIA

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ABSTRACT

The study examined the effect of staff cost on profitability of a sample of four oil and gas firms listed on Nigerian Exchange Group. Data for the study was sourced annual report of the firms. The study which adopted ex post research design and as anchored on Human Capital Theory. Fixed effect regression model was estimated to test the relationship between staff cost and profitability in the period 2012 to 2023. The study controlled for firm size and growth opportunities. The result of the study revealed that both salaries and wages and medical cost have significant negative effect on return on equity while training cost has a positive but insignificant effect on return on equity. It was therefore recommended that listed oil and gas firms in Nigeria should revisit the salaries and wages in terms of amount and timing of payment, reduce medical cost and increase staff training based on well-designed staff training programmes.

Keywords: Medical expenses. oil and gas firms, return on equity, training, salaries and wages.

***JEL Classification Code*:** J30, L25

1. INTRODUCTION

In the ever-changing world that is driven by constant changes in technology, low rate of turn-over, high rate of loss of man hours and highly competitive work environment, paying great attention to stock of human capital is critical to performance and competitiveness of firms. Paying great attention to stock of human

capital consists of human capacity building by recruiting requisite personnel as employees, training and retraining of employees, formulation, implementation, monitoring employees, providing incentive packages in the form of remunerations whose components include training and retraining of employees, provision medical services to employees and retirement benefits. Firms must incur cost to build viable stock of capital. These are termed staff costs. several studies have been carried out on the effect of staff cost on the profitability of firms. The studies produced divergent results (Chikaire-Ofoego *et al*., 2024)., Nangih *et al.,* 2020; Adelere, 2017; Omodero *et al.,* 2016). Most of the past studies concentrate on sectors other than the oil and gas sector despite the humongous contribution of the oil and gas industry to socio-economic development. Finally, the studies employed data that are updated to 2023. It is imperative to use updated data considering the dynamic nature of the oil and gas industries, technological and developmental changes across the globe. This study intends to fill the gap in the accounting literature. The purpose of the study therefore is to establish the extent to which staff cost affects the profitability of listed oil and gas firms in Nigeria. The specific objectives are:

i. To ascertain the effect of salaries and wages on the return on equity of list oil and gas firms in Nigeria.
ii. To determine the effect of staff training on the return on equity of listed oil and gas firms in Nigeria.
iii. To assess the effect of medical cost on the return on equity of listed oil and gas firms in Nigeria.

Guided by the specific objectives, the study set forth the following hypotheses:

H_{01}: There is no significant relationship between salaries and wages and return on equity of list oil and gas firms in Nigeria.

H_{02}: There is no significant relationship between staff training and return on equity of list oil and gas firms in Nigeria.

Ho_3: Medical cost does not have a significant relationship with return on equity of listoil and gas firms in Nigeria.

2. REVIEW OF LITERATURE

Conceptual Review

The Concept of Staff Cost

Staff costs is simply the total cost or the benefits and other expenses incurred by a firm on employees. It can also be defined in terms of the expenditure incurred for staff time used to deliver service. Staff cost is also known as personnel expenses, labour cost or the total amount of money spent by an organization on its employees. It includes comprises of employees' salary and wages, cost of employee training and development expenses, staff medical/ health insurance expenses, employees' retirement benefit and pensions and gratuity (Eshiet *et al*. (2021; Ajisafe *et al.,*2015; Nwachukwu, 2009). Staff cost constitutes a major component of the organizations recurrent or administrative costs. Staff cost represent a significant portion of expense. The purpose of staff cost is to build human capacity of employees in order to increase performance (Sowunmi *et al.* 2015). Akintoye and Adidu (2016) argue that human resource is a dependable and key factor in the determination of measurable growth of any organization.

Concept of Salaries and Wages

Salaries and wages refer to the compensation/ remuneration paid to employees for their work or services rendered or performed. They arise when workers enter into contractual relationship with organization to offer their human endowments in exchange for some forms of rewards known as salaries and wages. Employers pay salaries and wages in cash or in a cash equivalent such as cheque or by direct deposit into the employee's bank account (Agburu, 2012). Salaries and wages are usually paid payable at regular intervals, such as weekly, monthly or other intervals as specified in letter of engagement. (Craig *et al.*, 2020; Agburu, 2012).

Concept of Staff Training

Staff training refers to the continuing learning processes a company, firm or an organization implements to enhance the skills, knowledge, and competencies of its employees. Staff training is a development programme designed to help employees acquire new skills and knowledge relevant to their roles. In other words. it is a systematic development of the knowledge, skills, aptitude that is required by employees to perform in given task effectively and adequately (Abiodun, 1999). It is a human capacity programme to boost job efficiency productivity of employees and consequently to enhance an overall organizational effectiveness (Adelere, 2017).

Human capital development has become a key issue to stakeholders in the oil and gas industries, business managers and development experts on how best they can invest in their employees in order to achieve corporate objective. Development in human capital is the key source of competitive advantage which of course is derived from training and re-training of employees of firms or companies (Sowunmi *et al*., 2015). Eshiet *et al*. (2021) opined that knowledge, experience and skills gained from training, companies or firms can now view their employees as stock of human capital as well as an important resource. Stock of human capital predominately determines the earnings of individuals and by extension, the profitability of a company or firm. Hence, assessing the profitability of a firm may not go down well without considering the contribution of investing in employees, visa-viz staff cost and other related cost.

Concept of Medical Cost

Medical cost refers to the expenses incurred for healthcare services, treatments, and products of employees of a company or firm. It is also known as healthcare expenditure, medical expenses or financial expenditure incurred for the purpose of providing medical treatments or services to employees of a company. It includes hospital bills, doctors' fees, prescription medication cost, surgical expenses and physical therapy cost, retainership fees. Rising medical costs are indicators of unhealthy workforce or aging workforce and this could have devasting effect on staff productivity and overall financial performance of firms.

Concept of Profitability

Profitability is the extent to which a company's revenue exceeds its costs and expenses. It is a key indicator of a company's financial health, efficiency and success. The profitability of a firm or entity can be achieved in the short term through the sale of assets. However, this type of profitability is not sustainable. An organization must have a business model for sustainable growth and profitability. Profitability is measured with different metrics such as the gross profit margin, operating profit margin, net profit margin, and the earnings per share, return on assets, return on equity and return on sales amongst others (Penman, 2013, Chukwu & Wadike, 2018).

Concept of Return on Equity

Return on equity is an accounting measure of profitability. It measures a firm's profitability and efficiency in relation to equity or shareholders' fund. It indicates how much a shareholder gets from one Naira he/she has invested in the firm. A high value of return on equity suggests high profitability. Return on equity is very useful for firm valuation.

It is calculated thus

Net profit margin = $\frac{Profit\ after\ tax}{Equity}$

Theoretical Framework

Human Capital Theory

This study is based on the Human Capital Theory. proposed by Schultz (1961 The theory which has its root in labour economics contends that education or training imparts workers with useful knowledge and skills which if diligently applied by workers would lead to increase in productivity which in turn would increase workers' future income and lifetime earnings. The theory sees expenditure on education or training and development as investment since it is undertaken with a view to increasing personal incomes and corporate competitive advantage. Firm can invest in human capital through education, training and even medical treatment Human capital approach is used to explain or support occupational wage differential. This study considers Human Capital Theory as a relevant theoretical underpinning because it considers staff cost as investment meant to improve productivity of individual workers and competitive advantage of firms which ultimately could result in improved organizations performance. Baribefe and Richard (2021), Eshiet *et al.* (2021), and Onuorah *et al.* (2019) anchored their studies on Human Capital Theory.

Empirical Review

Chikaire-Ofoego *et al.* (2024) studied the effect of employee cost on the financial performance of twenty-six firms out a population of seventy-five listed manufacturing firms in Nigeria. The study which employed ex-post facto research design decomposed employee cost into employee salaries, employee retirement benefits and employee bonuses. It used earnings before tax margin as the measure of financial performance. It sourced data from the annual reports of the sampled firms from 2013 to 2022 and tested the formulated hypotheses using Pooled Ordinary Least Squares (OLS) regressions. The study found the following: Employee salaries have a non-significant but positive effect on the earnings before tax margin; Employee

retirement benefits have a non-significant but positive effect on earnings before tax margin; and Employee bonuses have a non-significant and negative effect on earnings before tax margin of listed manufacturing firms in Nigeria.

Guided by Resource Dependency Theory, Orwa *et al.* (2022) conducted a study to ascertain the effect of personnel costs on the financial performance of fifty-seven listed companies in Kenya in the period 2017 to 2021. The study analyzed a panel dataset collected from the published audited annual reports of the sample using random effect Generalized Least Square regressions. Findings revealed that personnel costs have a significant positive effect on financial performance whose proxy was return on assets.

Nangih *et al.* (2020) assessed the relationship between staff costs and the profitability using a sample of five oil and gas companies in Nigeria. The staff costs studied consisted of staff salaries, medical expenses, and training costs. Profit margin was the proxy for profitability. The study which stretched from 2013 to 2018, utilized descriptive, correlation, and regression analysis as tools for analyzing data retrieved from the annual reports of the sample. Findings revealed that while both salaries and training costs had a positive impact on profit margin, medical expenses showed a negative effect on profitability but the effect as only significant in respect of training costs. Our study differs from Nangih *et al.* 2020) in respect of time horizon (20120 to 2023) as against (2013 to 2018), sampled firms, proxy of financial performance (return on equity as against profit margin) and diagnostics such as test for heteroskedasticity. and serial correlation, a frequent plague in panel data analysis and controlled for confounding variables on financial performance such as firm size and growth opportunities.

The impact of employee benefits on the growth of a sample of ten consumer goods companies listed on the Nigerian Stock Exchange from years 2012 to 2019 formed the focus of study carried out by Agubata *et al.* (2022). With the aid of Eviews software, the study analyzed panel dataset gotten from the annual reports of firms in the sample. The results of the Fixed Effect regression revealed that employee benefits in terms of gratuity, pension, and medical allowance, had a positive and statistically significant impact on organizational growth.

Okoye and Ifeukwu (2021) investigated the effect of human resource cost on financial performance of brewery firms in Nigeria quoted on the floor of the Nigerian Stock Exchange over a 13-year period, 2007 to 2019. The study generated data the annual reports of the firms in the sample and measured financial performance using net profit margin, return on assets and return on equity. It was discovered that staff cost has positive and significant effect on the net profit margin and return on equity, but insignificant effect on return on Asset of quoted brewery firms in Nigeria.

Chukwu *et al*. (2019) examined the effect of human capital on the market value of banks in Nigeria. The paper used proxies of human capital related to remuneration and staff strength, and extracted data for five years from fourteen listed banks. Results from regression analysis showed that the human capital cost incurred on top level employees was beneficial to firm performance. Specifically, the proportion of highly paid employees, had a significant effect on the market value of firms, suggesting that investors' confidence increases with the strength of valuable stock of human capital in the payroll of banks.

Adelere (2017) examined the effect of staff training and development on organizational performance with reference to Nigeria Bottling Company. The study, grounded on research survey research design, gathered data from questionnaire administered and retrieved from a sample of 120 of staff of Nigerian Bottling Company Plc. Using regression analyses, the study found that staff training and development has a significant positive and strong relationship with Organizational Productivity.

Following theoretical submission that salary/wages and bonus/incentives serve as a form of motivation to the employees, Ojeleye (2017) administered structured questionnaire on 83 staff Abdul Gusau Polytechnic, Talata-Mafara and State College of Education Maru, Zamfara State in order to collected data to assess the impact of remuneration on employees' performance. The dependent variable was employees' performance while the independent variables was remuneration (salary/wages, bonus/incentives). The finding from Pearson correlation and multiple regressions suggested a strong and positive relationship between remuneration and employees' performance.

Chukwu and Egbunike (2017) focused on an aspect of human capital of chief executives in banks, evaluating the effect of their education, experience in a given bank, and industry experience on the performance of banks. Using data from 29 chief executives in 15 banks for a period of 10 years, and subjecting the data to regression analysis based a model which controlled for capital adequacy, the study documented that firm-specific training had a more significant and positive effect on bank performance. The result implies that staff cost on trainings that improve the knowledge and skill on firm-specific processes was more beneficial than other forms of investments in human capital.

Omodero *et al.* (2016) provided empirical evidence of the effect of human resource costs on the financial performance of firms in Nigeria by using OLS technique to data was collected from published financial statements of ten selected listed firms in Nigeria. The study covered a 10-year period, … and adopted profit after tax and turnover of firms as financial performance metrics. The results indicate that personnel benefit costs have positive and significant effect on Profit After Tax but insignificant positive effect on turnover of the sampled firms.

Zahra et al (2015) extended the investigation of the effect of salary, training and motivation on job performance to the universities in Pakistan. The collected data from a sample of 310 staff from 16 universities of twin cities of Pakistan i.e., Islamabad and Rawalpindi using questionnaire. The result of data analysis observed that the salary, training and motivation had positive relationship with job performance with salary demonstrating stronger relationship with job performance than training and motivation.

To determine the influence of human resource cost on financial performance, Bankole (2020), analyzed secondary data extracted from published annual financial statements of selected consumer goods companies in Nigeria for the period of ten years (10) running from 2009 to 2018. The study measured human resource cost in terms of salary and wages (SLW), pension cost (PEC), director's emolument (DCM) and gratuity cost (GRT) and used Return on Asset (ROA) as measure of financial performance. The. data analysis was done using Static Panel Estimation techniques which consisted of Pooled Ordinary Least Square Estimator, Fixed Effect Model, and Random Effect Model. The result of the study showed that PEC, DCM and GRT have

positive and statistically significant impact on ROA while SLW has positive but insignificant impact on ROA.

3. METHODOLOGY

This study adopted the ex post facto research design in a bid to achieve a holistic effect of staff cost on the profitability of oil and gas firm in Nigeria. The data employed for the study was generated from the annual reports of the four (4) oil and gas firms in Nigeria for the period of twelve (12) years i.e from 2012 to 2023..From a population of 13 oil and gas firms listed Nigerian Exchange Group on as at December 31, 2023, the study used purposive sampling technique to select a sample of four firms namely Ardova Plc, Conoil Plc, Japual Gold & Ventures Plc, and TotalEnergies Market Nigeria Plc. In selecting the sample, all firm year-observations with missing variables required for analysis were excluded thereby producing 36 firm-year observations.

Model Specification

The model of the study was specified as follows:

ROE = f(STAFF COST, CONTROLS).

For purpose of estimation, the functional model is restated as:

$ROE_{j,k} = \beta_0 + \beta_1 SAL_{j,k} + \beta_2 TRN_{j,k} + \beta_3 MED_{j,k} + \beta_4 FMS_{j,k} + \beta_5 RGW_{j,k} + \varepsilon_{j,k}$

Where: for firm j in year k,

ROE = Return on Equity, calculated as profit after tax divided by equity.

SAL = Salaries and wages

TRN = Staff training cost

MED = Staff medical expenses

FMS = Firm size, calculated as the natural log of total assets.

RGW = Growth pportunities computed as current $1 - \left(\frac{Current\ Revenue}{Last\ Year\ Revenue}\right)$

ε = Error Term

β_0 = Intercept

β_1 - β_5 = Regression Coefficient

The study controlled for firm size and growth opportunities in the empirical model because studies such as (Olawale et al., 2017; Chashmi & Fadaee, 2016; Akinyomi & Adebayo, 2013) have shown that they have significant impact on financial

performance. The a priori expectation is that coefficients of SAL, TRN and MED will be positive and significant at the 5%.

4. RESULTS AND DISCUSSIONS

Empirical Results and Discussion

The study displays the descriptive statistics in Table 1

The descriptive statistics revealed an average of N3258526million, N210547.4million and N108804.4million in respect of salaries and wages, training and medical expenses of staff respectively for the selected firms. The average net return on equity (ROE) of the sample is 37.24%. The values of salaries and wages, training and medical expenses of staff did not cluster around their respective mean as suggested by their respective standard deviations which are quite lower than the mean.

Table 1: Descriptive Statistics

	roe	sal	tran	med	fms	rgw
Mean	0.3723795	3258526	210547.4	108804.4	18.19984	-0.1398611
Std. Dev.	1.456507	2798588	421366.5	157553.8	0.7990201	0.4734165
Min	-1.233703	101850	1138	116	15.32246	-2.135
Max	8.722046	1.15e+07	2196327	587722	19.74274	0.923
Median	0.1277466	2015185	104397.5	28763	18.23885	-.0665
Variance	2.121412	7.83e+12	1.78e+11	2.48e+10	.6384331	.2241232
Skewness	5.415339	1.282424	3.654609	1.661278	-1.36464	-1.807578
Kurtosis	31.78348	3.874123	16.29752	5.054035	6.663221	10.29734
Obs	36	36	36	36	36	36

Source: Researcher's Computation, 2024

The result of correlation analysis is shown as correlation matrix in Table 2. The Table reveals that SAL, TRAN and MED which are the independent variables of interest are negatively correlated with ROE. Only SAL is significant at the 5% level. The

correlation coefficients are not above the 0.8 cap beyond which multicollinearity is likely to pose serious problem to result of regression analysis (Belsley *et al*. 1980).

Table 2: Correlation Matrix

	roe	Sal	Tran	med	fms	rgw
roe	1.0000					
sal	-0.4043*	1.0000				
tran	-0.2959	0.7716*	1.0000			
med	-0.1220	0.6486*	0.6977*	1.0000		
fms	-0.1754	0.6675*	0.7788*	0.5120*	1.0000	
rgw	0.4761*	0.5145	0.0881	0.0426	0.0570	1.0000

Source: Researcher's Computations, 20224

To estimate the empirical model, the study followed the recommendations of Cameron and Trevidi (2010) and Gujarati and Pocter (2009) and carried out Hausman Specification Test to choose between Fixed Effect regression model (FEM) and Random Effects regression model (REM). If the p-value of chi-squared statistic of Hausman Specification Test is less than or equal 0.05, the null hypothesis that REM is a better estimator than FEM is rejected and FEM is chosen. The result of Hausman Specification Test is shown in Table 3. Table 3 reveals a chi-squared statistic of 18.63 and a p-value of 0.0003. Consequently, the study estimated the empirical model using FEM.

Table 3: Hausman Specification Test

	Coefficients			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
sal	-2.232777	-0.9318168	-1.300961	0.7755608
tran	0.415568	-0.3020928	0.7176608	0.2459727

med	-0.1360361	0.2263263	-0.3623624	0.2179739
Fms	0.2787669	0.5305543	-0.2517873	0.1501628
rgw	1.984996	1.679691	0.3053047	0.1733618

chi2(3) = 18.63
Prob>chi2 = 0.0003

Source: Researcher's Computations, 20224

In performing Hausman Specification Specification Test and FEM, the study used natural logarithm of values of SAL, TRAN and MED in Table 1. In cases of non-linearity and non-normality of the variables, Cameron and Trevidi (2010) and Gujarati and Porter (2009) recommend log transformation of the variables. To detect heteroskedasticity and autocorrelation, the study carried out Modified Wald test and Wooldridge test. The result of Modified Wald test revealed a chi-squared statistic of 14.93 and a p-value 0.0048 thereby indicating the presence of heteroskedasticity. To resolve the issue of heteroskedasticity, the study reported the result of estimation using robust standard errors as recommended by Cameron and Trevidi (2010). The Wooldridge test shows F-statistic of 0.029 and a p-value of 0.8805. This suggests absence of first-order autocorrelation.

Table 4 presents the results of Fixed Effect Regressions.

Table 4: Fixed Effect Regression Results

roe	Coef.	Robust Std. Err.	t	p-value
sal	-2.232777	0.4300069	-5.19	0.014
tran	0.415568	0.3617493	1.15	0.334
med	-0.1360361	0.0440507	-3.09	0.054
fms	0.2787669	0.1925698	1.45	0.244
rgw	1.984996	0.8026233	2.47	0.090
cons	24.90045	4.61806	5.39	0.012
Number of obs		36		
Number of groups		4		
Obs per group:	min	3		
	avg	9.0		
	max	12		
F(3,3)		32.33		
Prob > F		0.0000		
R-sq:	within	0.7710		
	between	0.3716		
	overall	0.3421		

Source: Researcher's Computations, 2024

The result obtained in Table 4 shows F-statistic of 32.33 and a p-value of 0.0000. The p-value suggests goodness of fit of the model is excellent. Table 4 shows that the independent variables jointly explain 34.21% of the changes in the return on equity of the sampled oil and gas firms.

Test of Hypotheses.

H_{01}: There is no significant relationship between salaries and wages and return on equity of list oil and gas firms in Nigeria.

Table 4 reveals the coefficient of SAL is -2.232777 and a p-value is 0.014. Based on the p-value, the study rejects H_{01} and concludes that there is a significant relationship between salaries and wages and return on equity of list oil and gas firms in Nigeria.

H_{02}: There is no significant relationship between staff training and return on equity oflist oil and gas firms in Nigeria.

From Table 4, it is observed that the coefficient of TRAN is 0.415568 and p-value is 0.334. Based on the p-value, the study accepts H_{02} that no significant relationship between staff training and return on equity of list oil and gas firms in Nigeria.

Ho_3: Medical cost does not have a significant relationship with return on equity of list oil and gas firms in Nigeria.

Table 4 indicates the coefficient of MED is -0.1360361 and p-value is 0.054. Based on the p-value, the study rejects H_{01} and concludes that medical cost has a significant relationship with return on equity of list oil and gas firms in Nigeria.

Discussion of Results

From the result in Table 4, 1% increase in salaries and wages is associated with 233% reduction in return on equity. This could be because employees perceive the salaries and wages to be inadequate to motivate them to exert more effort to improve productivity and by extension financial performance. This is surprising as workers in the oil and gas sector are perceived to be one of the highest paid in Nigeria. Th result does not agree with the theoretical prediction of positive relationship. It also does not agree with Orwa *et al.* (2022) who established a positive effect of personnel cost on return on assets in Kenya. It is equally contrary to Nangih *et al,* (2020) who found a positive but insignificant effect of salaries and wages on profit margin of oil and gas firms in Nigeria. The result is also contrary to Chikaire-Ofoego *et al.* (2024). The coefficient of TRAN (β_2 = 0.415568) suggests that as staff training cost increases by 1%, return on equity increases by 41.56%, all else held constant. The relationship is

not significant (p-value 0.334). Though the result supports the theoretical expectations of positive relationship between training costs and financial performance, the p-value of 0.334 implies that staff trainings have not contributed significantly to enhancing the profitability of the sampled firms. This could be because of inappropriate trainings or failure of staff to apply the training outcomes in the performance of their duties. The result partially supports Nangih *et al.* (2020) and Adelere (2017). The study discovered in Table 4 that staff medical cost has a negative coefficient (β_2 = -0.1360361). This gives indication that as staff medical cost goes up by 1%, return on equity falls by 13.60%, all else remaining constant. This is significant (p-value = 0.05). Significant rise in medical expenses points to staff having frequent medical related issues and less healthy workforce which could likely impact negatively on staff performance with a attendant decline in staff productivity and poor financial performance of affected firms. The result contrasts with Nangih *et al.* (2020) who found a statistically insignificant relationship with financial performance proxied by profit margin. Firm size (FMS) and grow opportunities (RGW) have positive coefficients. While FMS has insignificant effect on financial performance, RGW showed significance at the 10% which is weak.

5. CONCLUSION AND RECOMMENDATIONS

Based on Human Capital Theory, this study explored the relationship between staff cost and the profitability proxied by return on equity of a sample of four oil and gas firms listed on the Nigerian Exchange Group in the period 2012 to 2023. Staff cost encompasses employee salaries and wages, employee training cost and employee medical expenses. Findings of multivariate analysis showed that while salaries and wages have negative effect on financial performance, medical expenses have beneficial effect on financial performance of a sample of four oil and gas firms. It also demonstrated that employee training cost has no effect on the financial performance of the sample.

Based on the findings, this study makes the following recommendations:

1. Oil and gas firms in Nigeria should revisit the salaries and wages in terms of amount and timing of payment to make it attractive to employees so as to motivate employees to enhanced financial performance.
2. There should be an increase in well-designed staff training to encourage employees to contribute maximally towards financial performance of firms.

3. Oil and gas firms in Nigeria should reduce medical cost by ensuring that aging staff and frequently sick employees are discharged in line with firm policy and more vibrant employees are brought on board.

Competing Interest: The authors declare that there is no competing or conflicting interest in this manuscript.

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