Journal of Business and Economic Policy
UNIZIK Business School, Nnamdi Azikiwe University, Awka

UBSJBEP Volume 2 Issue 2
ISSN (Online) 0795 – 7149
https://journals.unizik.edu.ng/index.php/ubsjbep

HUMAN CAPITAL AND PROFITABILITY OF LISTED OIL AND GAS COMPANIES IN NIGERIA

Asmau Alex Zatiock[1] Gloria Pam Dachomo[2] Joseph Benjamin Gwabin[3]
[1]*Department of Business Administration Kaduna State University, Kaduna State, Nigeria.*
Email: asmau_alex@yahoo.com
[2&3]*Department of Accounting, Faculty of Management Sciences, Nnamdi Azikiwe University , Awka, Anambra State, Nigeria.*
Emails: glodachomo@gmail.com & benjamingwabin@kasu.edu.ng

CITATION: Zatiock, A.A., Dachomo, G.P. & Gwabin, J.B. (2024). Human capital and profitability of listed oil and gas companies in Nigeria, *UBS Journal of Business and Economic Policy*, 2(2), 52 - 66.
Paper Type**: Original Research Paper;* ***Correspondence: asmau_alex@yahoo.com

Abstract
This study examined the effect of human capital on the financial performance of listed oil and gas companies in Nigeria. The study employed the ex-post facto research design which allows for historical facts to be used in gaining insight into the happenings of an entity under investigation. The population of the study comprises of all the eleven (11) oil and gas companies listed of the Nigerian Exchange Group as at 2022. A total of Nine (9) oil and gas companies were sampled using the purposive sampling technique. This technique is based on certain criteria set to ensure that only companies that meet the set criteria were sampled. Covering a period of fifteen years (2008 to 2022) panel data was extracted from the sampled oil and gas companies' annual reports and accounts listed on the Nigerian Exchange Group. The data was analysed using multiple regression as a technique. The findings of the study revealed that, Pension Plan has positive and significant effect on the profitability of listed oil and gas companies in Nigeria. This was evidenced in the effect of pension plan on return on assets and return on equity which were significant at 1%. On the contrary, Training and development and salaries and wages revealed a positive but insignificant effect on return on equity. Based on the findings of the study, the study concludes that, employee welfare programs in not only fostering employee satisfaction and loyalty but also enhancing profitability. Management of oil and gas companies in Nigeria should aim for fairness and equity in compensation packages, recognizing their indirect influence on productivity and employee satisfaction. Thus, it was recommended that, Management should work closely with human resources to design employee benefit packages that align with both organizational goals and employee needs, thereby creating a motivated and dedicated workforce.

Key Words: *Human Capital, Pension Plan, Training and Development, Salaries and Wages, Profitability.*

Introduction
The profitability of the Nigerian oil and gas industry in relation to variables such as Pension Plan, Training and Development, and Salaries and Wages is a critical aspect that merits attention. Nigeria's oil and gas sector has traditionally been a major contributor to the national economy, and its financial performance is influenced by various factors, including the effective management of human capital (Amahalu, Okudo, Okafor &

Onyeka, 2023). The industry faces challenges such as fluctuations in global oil prices, regulatory uncertainties, and technological advancements, making the role of a skilled and motivated workforce crucial for sustained profitability. The profitability dynamics within the Nigerian oil and gas industry are intricately connected to the effective management of human capital. The industry's financial success hinges on the ability to cultivate a skilled and motivated workforce through initiatives such as well-structured Pension Plans, robust Training and Development programs, and competitive Salaries and Wages. A comprehensive approach to human capital, encompassing employee satisfaction, skill enhancement, and fair compensation, is pivotal in driving operational efficiency, innovation, and adaptability within this dynamic sector. A strategic alignment of human capital practices with the industry's specific challenges, such as global oil price fluctuations and regulatory uncertainties, becomes essential for sustaining profitability.

In the Nigerian oil and gas industry, human capital problems rank among the most significant obstacles. Insufficiently trained people operating highly technical areas of a company's operation is a prime example. Clearly, this has a negative impact on the business's performance and impedes effective service delivery (Maduagwu et al. 2016). Also, the practise of 'casualization' of workers, also known as contract employment, is widespread among companies in this area, which has led to a series of disputes between individuals referred to as precarious workers and the firms' management (Alike, 2018). Employees tend to lose faith in the system as a result of these problems, resulting in a reduction in productivity. Ultimately, it reduces the profitability of the affected companies. Despite the fact that certain studies on human capital and profitability have been conducted in Nigeria, such as those by Ali (2015), Ocheni (2018), and Inyada (2018), it is vital to divert attention to the oil and gas industry, which has not received much attention in this respect. In addition, the coverage period of previous research did not extend beyond 2016; this study aims to fill in these gaps such the period of oil doom which attracts less profit. Consequently, the purpose of this study is to investigate the effect of human capital on the profitability of Nigerian oil and gas companies that are publicly traded. In view of the foregoing, the study raises and intends to find answers to the following questions:

i. How does firm pension plan affect profitability of listed oil and gas companies in Nigeria?
ii. What is the effect of training and development on profitability of listed Oil and Gas Company in Nigeria?
iii. To what extent does salaries and wages have significant effect on the profitability of listed Oil and Gas Company in Nigeria?

Hence, the main objective of this study is to assess the effect of human capital on profitability of listed oil and gas companies in Nigeria. Specific objectives are to:

i. assesses the effect of pension plan on profitability of listed oil and gas companies in Nigeria;
ii. examine the effect of training and development on profitability of listed oil and gas companies in Nigeria;
iii. evaluate the effect of salaries and wages on the profitability of oil and gas companies in Nigeria.

UBSJBEP Volume 2 Issue 2
ISSN (Online) 0795 – 7149
https://journals.unizik.edu.ng/index.php/ubsjbep

Based on the research questions and objectives of the study, the following hypotheses stated in null form are tested:

H_{o1}: Pension plan has no significant effect on profitability of listed oil and gas companies in Nigeria.

H_{o2}: Training and development do not significantly affect profitability of listed oil and gas companies in Nigeria.

H_{o3}: Salaries and wages do not have significant effect on the profitability of listed oil and gas companies in Nigeria.

Literature Review

Conceptual Review

Profitability

The word profitability may refer to either commercial/private profit or public profit. The measure of commercial profitability has been used in this investigation, even though the use of public profitability, which is based on the economists' concept of cost and benefits (i.e., the true opportunity cost and the benefits for the society as a whole), appears to be a more appropriate measure of profitability of public enterprises (Okudo & Amahalu, 2023). This is owing to the widespread adoption and ease of understanding of the commercial profitability metric, as well as the fact that it is widely used to assess the financial health of publicly traded companies. Although profits are important, management does not always put them ahead of the needs of its customers, employees, or the community when making decisions (Pandey, 2010; Sandhar & Jaglani, 2013). For a business to be profitable, it must be able to generate income after deducting all operating expenses. This demonstrates the administration's ability to maximize profits from the market's available resources (Ezejiofor et al., 2017). Profitability is "the capacity of a particular investment to make a return from its usage," as defined by Harward and Upton (2012). However, profitability and efficiency are not interchangeable concepts.

Human Capital

Human capital refers to an individual's accumulated set of skills, knowledge, and character traits that manifest themselves in their work performance and so generate economic value (Gary, 1964). Those qualities that a person acquires via formal training and practical experience. Human capital may be thought of as a productive resource: more money invested in it leads to more output in the form of labour (Chikwe et al., 2015). Human capital refers to an organization's or societies accumulated store of intangible assets, such as its members' education, experience, expertise (Amahalu, Ezechukwu & Okudo, 2022), and drive, which are used to further the organization's or society's mission and improve its members' standard of living. What we mean by "human capital" and "productivity" is the accumulation of information, knowledge, and abilities via formal and informal learning experiences, with the help of a supportive environment. The intangible element of production that contributes human intelligence, skills, and competences in the creation and distribution of commodities and services is what we mean when we talk about human capital.

The ability of an organisation to rebuild is a key factor in its ability to stay in business. This can be done by reaching goals and improving the methods used to reach those goals. So, organisations should try to encourage creativity and new ideas so they can keep up with how complicated and confusing the world of work is right now. In order to gain a competitive edge, businesses must try to set themselves apart from their competitors by hiring people with more knowledge and skills (Nwaiwu & Joseph, 2021). Creativity, flexibility, adaptability, and good performance are examples of values and ethics that help an organisation gain a competitive advantage. So, skilled employees are seen as intellectual capitals and important economic resources that help employers gain a competitive edge (Efenyumi, Okoye & Nwoye, 2022). Human capital which encompasses the skills, knowledge, and experience of a workforce, plays a critical role in the success of any organisation. Effective training and development programs not only enhance this human capital but also contribute to employees' long-term financial well-being. As employees gain new skills and expertise through training they become more valuable assets to the company, which can lead to higher salaries and, ultimately, more substantial pension plan contributions for a secure retirement.

i. Pension Plan

A pension plan is a long-term savings strategy with the end goal of receiving regular payments from one's employer upon leaving active employment. It's the money that gets handed over to workers after they've put in their time and been deemed too old or sick to work or have reached the legal retirement age set by the government or the corporation. For as long as the retired officer lives, the company they formerly worked for will continue to pay them a certain amount each month as a token of their appreciation for their service (Adam, 2005). The term "pension plan" may also refer to the means through which an individual contributes to a pension scheme out of his or her pre-tax income. When a someone retires from active employment, they may be eligible to receive a pension from either the government or their former employer to help them weather the financial storms of old age.

Pension plan is defined as "a retirement plan account that an employer develops to offer an employee a set payment when the employee retires" by Chisom (2017) for the purposes of this research. A kind of a defined benefit plan. To put it another way, "employment security" is "a system through which employers of labour agree to reduce the hardships, poverty, and dependence of their workers by providing for them in the event of their becoming unemployed, retiring, or otherwise leaving the workforce."

ii. Training and Development

Expenditure on staff training is another dimension of staff costs incurred by entities. Trainings usually involve costs payable by entities. Staff training costs are seen as expenditures incurred on staff or employees for capacity building in order to maximize performance (that is profit). Capacity building entails investment in human capital, institutions and practices necessary to enhance human skills, overhaul institutions and improves procedures and systems (Nangih et al., 2020; Umenzekwe, Okoye, Nwoye, Adeniyi & Uchegbu, 2022).

In addition, according to Imeokparia and Bola (2020) training is an organisational effort designed to assist an employee in acquiring the fundamental skills necessary for the effective performance of the duties for which he was engaged or employed. On the other hand, he defines development as the actions that expose an individual to the opportunity to fulfil extra responsibilities and occupy positions of prominence within the organisational structure. Training as it is commonly understood exposes employees to the skills necessary for effective job performance, whereas development equips employees with the knowledge necessary for performing additional responsibility to a particular task faster and better than before; development may involve exposing an employee to more challenging tasks.

In contrast, Gunu et al. (2013) describes training as the whole process through which an individual's behaviour is adjusted to conform to a predetermined and stated pattern. Odiorne (2003) agreed, arguing that training should result in a change in behaviour. If it does not, it indicates that the trained individual lacks the intelligence quotient (IQ) to comprehend, or that he has a supervisor who conflicts with the proposed training behaviour, or that he has peers or subordinates who believe that the proposed training behaviour would not work, or that he may be a consultant for the environment. By considering the above definitions, one may conclude that both training and development result in an individual's transformation. Thus, there is a degree of resemblance between training and development, since both strive to bring about a positive change in a person. For this reasons, this study align itself with the concept of training and development as defined by Ileka and Muogbo (2020) who defined training and development as "the formal methods an organisation uses to support the learning of its personnel so that their resulting behaviour contributes to the achievement of both the organization's and the individual's goals and objectives".

iii. Salaries and Wages

Salaries and wages refer to money received or owed to an employee in exchange for labor done or services rendered on behalf of an employer. In addition, it is a predetermined sum of money given to an employee on a periodic basis, such as monthly or annually, rather than by the hour (Nangih et al., 2020). Salary, as contrast to wages, is a predetermined sum provided to an employee by an employer in exchange for that person's services. In Nigeria, a worker's wage is not just a number; it's a reflection of how much his employer values him. How much an employer values an employee has a direct effect on how hard that person works. If an employee is content with his pay, he is more likely to give his all on the job. Someone with a high income is more invested in doing a good job because he wants to keep his job security and compensation.

Theoretical Review

The Human Capital Theory

This study adopts the human capital theory as its theoretical framework. It also extends the human capital theory to incorporate both its direct and indirect effects on company Performance. The human capital theory suggests that individuals with more or higher human capital achieve higher performance when executing tasks (Becker, 1964). Human capital comprises the stock of knowledge and skills that reside within individuals. The

term human capital was introduced by Theodore W. Schultz (1961) the theory assumes that, different levels of education and training contributes to a different level of wages and salaries. It also assumes that an increase in knowledge, skill and ability improve human capacity. Human capital theory seeks to explain the phenomena using the economics point of view. This view asserts that to invest in human capital a competitive advantage and sustainability in the complex business world will be gained. The human capital theory which is a current human capital measurement has many human capital and human resource development implications.

Human capital theory describes the value of maximising labour and the ways in which a company may build up its workforce via training and experience. Human resource development (HRD) theory relies on a familiar three-legged stool to boost performance, with ethics providing the base on which to build. Human capital theory also sheds light on why and how businesses succeed financially. An employee with more knowledge and training is better able to contribute much more productive effort than one with less. It is generally agreed that a company may improve its performance by placing a greater emphasis on the knowledge, skills, and abilities of its personnel, a notion known as human capital theory. Given this framework, it seems reasonable to predict that a company's worth, as measured by its performance, would rise if its people were better equipped thanks to training and development. Multiple metrics, including profitability ratios, can be used to evaluate performance in this context. Thus, this study is underpinned by the human capital theory. With respect to pension plans, an understanding by employees that after retirement the employer will still be concerned about their wellbeing could affect their level of commitment which in turn may affect the company's performance. Similarly, training and development increase the capacity of employees. As an asset, the company uses this to drive its operations and future plans which eventually improves employees' performance and generate better gains for the company. Finally, salary and wages motivate employees to give in their best in pursuing corporate objectives which include shareholder wealth maximization and profitability.

Empirical Review

Agubata et al. (2022) analysed the impact of employee perks on the sector's financial performance. Panel data from 10 consumer goods companies traded on the Nigerian Stock Exchange (NSE) between 2012 and 2019. After exposing the dataset to a battery of tests to evaluate its adherence with statistical prescriptions, the panel Random effect modelling technique was used to accomplish the stated purpose. Earnings per share is used as a proxy for organizational growth, and the research found that bonuses, health insurance, and base pay all have a role in determining this metric to varying degrees. It was discovered that the pension plan and salary had a beneficial influence, whereas the medical bonus and the gratuity had the opposite effect. On the other hand, pension plans are statistically inconsequential. The results suggest that compensation increases have a positive effect on business growth. This means that pension plans for workers will need to be taken into account if the firm is to grow. The researchers only looked at one profitability indicator. This research aims to solve this methodological void by using a multi-dimensional profitability index. As an added bonus, our research will help close a knowledge vacuum in a crucial area for the Nigerian economy: the oil and gas industry.

UBSJBEP Volume 2 Issue 2
ISSN (Online) 0795 – 7149
https://journals.unizik.edu.ng/index.php/ubsjbep

Eneh et al. (2022) analysed how oil and gas companies in Nigeria responded to worker incentive programs. The impact of pension plans on business profitability was the focus of this research. Eleven (11) oil and gas companies trading on the Nigeria Stock Exchange during the time were used as a population from which four (4) were randomly selected as a sample. Annual financial statements of the chosen companies were read for secondary data. Annual profit is the dependent variable and a measure of business profitability, while salaries and wages paid to employees and the pension plan for those employees serve as independent variables and proxies for the incentive system. Using a Pearson product moment correlation matrix, the study analysed the data we gathered from the chosen businesses. The investigation showed that the salaries and compensation of oil and gas company employees have a positive and statistically significant effect on annual company profit. Although the oil and gas industry was the focus of this research, only four firms were included in the sample, which may not be large enough to draw valid conclusions about the industry as a whole. By including a larger subsample of oil and gas firms that have all of the necessary information, this research will close a methodological gap.

Nangih et al., (2020) examined the specific effect of staff training and development costs on the profitability of quoted oil and gas companies in Nigeria. Data were collected from annual financial reports of the firms for the period, 2013-2018. Judgmental sampling technique was used to select a total of five (5) companies for the study and analysed using descriptive, correlation and regression analysis tools. The results of the test of hypotheses indicated that salaries and wages positively affect profit margin. In view of the above findings, it was recommended that the management of oil and gas firms in Nigeria should pay greater attention to staff training and development while ensuring that health hazards within the workplace are minimized as much as possible. The study noted that since the success or failure of any management was a function of its relationship with the employees, management should always give priority to the welfare of its employees. In view of this, the study created a period gap that needs to be filled. The present study intends to extend the study period to cover the most recent available data so as to provide more relevant findings that will support the current needs of oil and gas companies in Nigeria.

Onyekweluet al. (2020) investigates compensation as a technique for boosting Employee Performance in Nigeria. The research uses primary and secondary sources to collect data, as well as copies of the questionnaire. The study of data collected from Bottling Companies in Nigeria was conducted using survey and descriptive research methods, and hypotheses were evaluated using regression analysis and ANOVA. It was discovered that compensation has a vital impact in enhancing the performance of employees inside an organisation. Therefore, the research shows that organisations should choose the appropriate compensation strategy that satisfies the desire of their employees to boost their productivity.

Materials and Methods

The study employed the ex-post facto research design. This was considered appropriate in examining the effect of human capital on profitability of listed oil and gas companies in Nigeria. The design allows for the use of past information in establishing cause and effect. The population of the study comprised all 11 oil and gas companies listed on the Nigerian Exchange Group (NGX) as at 31st December 2022. The census sampling technique was employed in addition to two filters in determining the sample size of the study. The census sampling technique give equal chance for each company to be selected as sample. However, the period of the study and the availability of data was used to filter out. 11 Plc was delisted while Capital Oil Plc was suspended due to non-compliance. Consequently, a total of 9 oil and gas companies were used as sample size of the study. The study covered a fifteen year period (2008 to 2022) these period was characterised by instability in exchange rate and global oil prices in the international market. These affected the profitability of the operators in the oil and gas sector of the Nigerian economy. Hence, the need to examine the effect of human capital on profitability of listed oil and gas companies in Nigeria. The sample size of the study is presented in Table 1 as follows:

Table 1
Sample Size of the Study

S/N	COMPANY	DATE LISTED
1	ArdovaPlc	Jan. 1, 1978
2	ConoilPlc	Jan. 1, 1989
3	Eterna Plc	August 1, 1998
4	Japaul Gold & Ventures Plc	August 10, 2005
5	MRS Oil Nigeria Plc	Jan. 1, 1978
6	Oando Plc	Feb. 24, 1992
7	RAK Unity Pet. Comp. Plc	March 21, 1989
8	Seplat Energy Plc	April 14, 2014
9	Total Energies Nig. Plc	Sept. 11, 2001

Source: Extracted from Nigerian Exchange Group (NGX) 2024.

Secondary data was extracted from the annual reports and accounts of the sampled oil and gas companies. This resulted in a panel data set that was analysed using multiple regression technique. This technique allows for the estimation of fixed effect model (FEM) and random effect model (REM). The Hausman specification was applied in deciding the appropriate model with the best linear unbiased estimators (BLUE).

This study intends to examine the effect of human capital and profitability of listed oil and Gas Company in Nigeria. The dependent variable for this study is profitability, which is measured in terms of Return on Equity (ROE), while the independent variable is human capital investment, which is measured by Pension Plan (PEN), Training and Development (TRD) & Salaries and Wages (SAW).

Table 2
Variable, Definition and Measurement

Variable	Acronym	Definition & Measurements	Sources
Dependent Variables			
Return on Equity	ROE	Measures a firm's return on shareholders' equity (Profit after Tax / Total Shareholders' Equity)	Phongren, Harrison & Oliver, 2009
Independent Variable			
Pension Plan	PEN	It is the total cost of employer's contribution for retirement plan as stated in the financial statement.	(Fapohunda, 2013)
Training and Development	TRD	The total cost of training and development as stated in financial statement.	(Olatunji et al., 2021)
Salaries and Wages	SAW	Total cost of salaries and wages stated in the financial statement	(Tamunotonye & Ifeanyichukwu, 2022)
		Control Variables	
Firm Size	FS	Natural logarithm of total assets	(Nwauzor & Longjohn, 2021)
Leverage	LEV	Proportion of total debts to total assets	(Odunayo & Festus, 2020)

Source: Compiled from Empirical Literature (2024).

In line with the measurements and variables of the study, the model of (Gimba & Anyanwu, 2022) stated as $ROI = \alpha + \beta_1 SCT + \beta_2 NOS + \beta_3 ECS + \varepsilon_{it}$ was adopted and modified. Thus, the study made use of the modified and adapted model as presented below. This model is formulated based of the proxies of Human Capital (PEN, TRD, SAW) and Profitability (ROE).

The mode is:

$Y_{it} = \alpha + \beta_0 X_{it} + \varepsilon$ ----------Eqn 1

Y_{it} = Dependent variables of firm ì for time period;
= the function of ROA, ROE and EPS;

$ROE_{it} = \alpha + \beta_1 PEN_{it} + \beta_2 TRD_{it} + \beta_3 SAW_{it} + \beta_4 FS_{it} + \beta_5 LEV_{it} + \varepsilon_{it}$ ----------Eqn 2

Where:
ROE = Return on Equity (Dependent variable)
PEN = Pension Plan (Independent variable)
TRD = Training and Development (Independent variable)
SAW = Salaries and Wages (Independent variable)
FS = Firm Size (Control variable)
LEV = Leverage (Control variable)
A = Constant;
$\beta_1 – \beta_5$ = Coefficients of explanatory variables;

UBSJBEP Volume 2 Issue 2
ISSN (Online) 0795 – 7149
https://journals.unizik.edu.ng/index.php/ubsjbep

ε = Error term.

Results and Discussion

The effect of human capital on profitability of listed oil and gas companies was established by analysing the panel data set generated for the study. The results are thus discussed as follows.

Table 3

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Minimum	Maximum
ROE	135	0.1444	0.3018	-0.9883	0.9959
PEN	135	0.1195	0.1052	0.0065	0.7326
TRD	135	0.0564	0.0792	0	0.4307
SAW	135	0.8241	0.1309	0.2674	0.9889
FS	135	17.174	1.4309	13.486	20.375
LEV	135	0.5376	0.2837	0.0239	0.9911

Source: Extracted from STATA 16 Output file, 2024

Correlation Matrix

Correlation shows the direction and degree of association among variables. The associations among the dependent variables was examined and the results presented in Table 4.

Table 4

Correlation Matrix

VARIABLE	ROE	PEN	TRD	SAW	FS	LEV
ROE	1					
PEN	0.4269*	1				
	0.0000					
TRD	0.0497	0.1885*	1			
	0.5666	0.0286				
SAW	0.3974*	0.7187*	0.2829*	1		
	0.0000	0.0000	0.0009			
FS	0.0354	0.1327	0.1456	0.4044*	1	
	0.6833	0.1249	0.0919	0.0000		
LEV	-0.1296	0.0514	0.2975*	0.1434	0.3490*	1
	0.1341	0.5534	0.0005	0.0970	0.0000	

Source: Extracted from STATA 16 Output file, 2024

The correlation results reveal several interesting patterns among the variables. Firstly, Return on Equity (ROE) shows significant positive correlations with Pension plan (PEN), Salaries and wages (SAW), and firm size (FS), indicating that companies with higher ROE tend to have higher pension plans, salaries and wages, and firm size. Additionally, pension (PEN) exhibits positive correlations with salaries and wages (SAW) and firm size (FS), reinforcing the idea that profitable companies also experience increased salaries and wages. Furthermore, the negative correlation between Leverage (LEV) and ROE suggests that higher leverage might be associated with lower return on equity.

However, correlation can be used to assess the level of multicollinearity among variables. Thus, an independent test of multicollinearity was conducted and presented in subsequent section.

Diagnostic Test

The fulfilment of linear regression assumptions is necessary in ensuring a robust and appropriate model is selected. In view of this, the Heteroskedasticity, serial correlation and Multicollinearity test was conducted and the results presented and discussed as follows.

Table 5
Heteroskedasticity Test (Groupwise)

Chi2(9)	560.48
Prob>chi2	0.0000

Source: Extracted from STATA 16 Output file, 2024

The presence of groupwise heteroskedasticity in the study of human capital and profitability among listed oil and gas companies in Nigeria implies that the variance of the error term differs across distinct groups within the dataset, potentially impacting the reliability and validity of statistical analyses. In this context, it suggests that variations in human capital factors and their effects on profitability may differ significantly between different categories of companies. This problem was addressed using the panel corrected standard errors model.

Table 6
Serial Correlation Test

F(1, 8)	15.862
Prob>F	0.0040

Source: Extracted from STATA 16 Output file, 2024

Serial correlation refers to the dependence of error terms on their own past values, which violates the assumption of independence required for classical linear regression models. Detecting and addressing serial correlation is crucial as it can lead to biased parameter estimates, inflated standard errors, and erroneous conclusions. The results in Table 6 showed presence of autocorrelation in the error terms of the regression analysis given a p-value of 0.0040 which is less than 5%. Thus, a more robust model was estimated and interested for the study.

Multicollinearity Test

The multicollinearity assumption posits that, there should not be interaction among the independent variables. This is to allow for the establishment of direct relationship with the dependent variables.

Table 7
Multicollinearity Check

Variable	VIF	1/VIF
PEN	2.21	0.453510
TRD	1.18	0.849615
SAW	2.68	0.372550
FS	1.42	0.705263
LEV	1.23	0.812203
Mean VIF	1.74	

Source: Extracted from STATA 16 Output file, 2024

The results of multicollinearity test in Table 5 shows the Variance inflation Factor (VIF) and Tolerance value (1/VIF) for each of the independent variables. According to Gujarati (2003) a VIF value between 1 and 10 with a corresponding TV of less than 1 suggest an acceptable level of multicollinearity. Based on the results presented above, the highest VIF is 2.68 with a corresponding TV of 0.372550 which is less than 10 and 1 respectively. Therefore, there is little or no multicollinearity among the independent variables of the study

Hausman Specification Tests
The choice between the fixed effect model and random effect model in panel data analysis is determined by the outcome of Huasman Specification Test. Hence, the test was conducted and the results revealed a p-value of 0.0000 and a corresponding chi2(5) value of 39.40. This suggest that the fixed effect model (FEM) is suitable.

Regression Results
The effect of Human Capital Development and Profitability of Listed oil and gas companies was examined in this study. The regression of the panel data analysis for each of the dependent variables are resented and discussed as follows.

Table 8
Summary if Regression Results

ROE	Coef.	Het. Std. Err	Z	P>|Z|
PEN	0.1856	0.0759	2.44	0.014
TRD	0.0058	0.0150	0.38	0.701
SAW	0.0964	0.0703	1.37	0.170
FS	0.0099	0.0239	0.41	0.679
LEV	-0.3468	0.1036	-3.35	0.001
_cons	-1.3093	0.4583	-2.86	0.004
R-sq	0.2056			
Wald chi2(5)	34.03			
Prob>chi2	0.0000			

Source: Extracted from STATA 16 Output file, 2024

The regression results in table 8 showed an intercept term (_cons) that is negative and significant (-1.3093, p=0.004), suggesting a baseline level of profitability below zero. The R-squared value (0.2056) indicates that approximately 20.56% of the variance in ROE is explained by the independent variables included in the model. The Wald chi-squared test (Wald chi2(5) = 34.03, p=0.0000) indicates overall significance of the model, implying that at least one independent variable has a statistically significant effect on ROE. These results provide valuable insights into the factors influencing profitability within the Nigerian oil and gas industry, highlighting the importance of human capital investments and financial leverage in shaping company performance.

Discussion of Findings

The significant positive coefficient for PEN (0.1856, p=0.014) suggests that investments in employee productivity positively influence profitability in Nigerian oil and gas companies. This implies that companies that invest in enhancing the skills, efficiency, and effectiveness of their workforce tend to experience higher returns on equity. Such investments could include training programs, technological advancements to streamline operations, or initiatives to improve employee morale and engagement. The finding underscores the importance of human capital development as a driver of profitability in the oil and gas sector, highlighting the need for companies to prioritize investments in their workforce to remain competitive and sustain long-term profitability.

The non-significant coefficient for TRD (p=0.701) suggests that there is no statistically significant relationship between training expenditure and profitability in Nigerian oil and gas companies. This finding may indicate that while training is important for employee development and performance, its direct impact on profitability may not be evident within the context of the studied companies. It's possible that the effectiveness of training programs or the specific metrics used to measure training expenditure may vary across companies, leading to inconsistencies in the observed relationship. Nonetheless, this result does not negate the importance of training.

In addition, the non-significant coefficient for SAW (p=0.170) suggests that there is no statistically significant relationship between average salary and profitability in Nigerian oil and gas companies. This finding may indicate that while competitive compensation is important for attracting and retaining talent, it may not be a significant determinant of profitability within the studied companies. It is however, important for companies to ensure that salary levels remain competitive within the industry to attract and retain high-quality employees, even if the direct impact on profitability is not immediately evident.

Conclusion and Recommendations

The study unequivocally establishes the positive impact of allocating resources to pension plans within listed oil and gas companies in Nigeria. Listed oil and gas companies that prioritize pension plans exhibit significantly higher returns on equity (ROE). This finding underscores the pivotal role of employee welfare programs in not only fostering employee satisfaction and loyalty but also enhancing profitability. While the study did not find a direct statistical impact of training and development investments on ROE, the broader implications suggest a nuanced approach. Continuous evaluation

and customization of training initiatives are imperative. Listed oil and gas companies should remain committed to skill development, viewing it as a long-term investment in competitiveness and adaptability. Variations in salaries and wages did not demonstrate a significant direct effect on financial metrics in the provided model. However, the underlying message emphasizes the importance of balanced compensation structures. Management of oil and gas companies in Nigeria should aim for fairness and equity in compensation packages, recognizing their indirect influence on productivity and employee satisfaction.

In line with the conclusions made, management of listed oil and gas companies should work closely with human resources to design employee benefit packages that align with both organizational goals and employee needs, thereby creating a motivated and dedicated workforce. In addition, listed oil and gas companies should continue investing in training and skill development programs for their employees. While the immediate impact might not be evident in financial metrics, a skilled and adaptable workforce is instrumental in fostering innovation and operational efficiency. Finally, human resources departments of listed oil and gas companies should conduct regular salary benchmarking studies to remain updated with market trends and adjust compensation packages accordingly.

References

Amahalu, N.N., Okudo, C.L., Okafor, O.O., & Onyeka, C.M. (2023). Effect of human resource cost on profitability of quoted industrial goods firms in Nigeria. *International Journal of Research in Commerce and Management Studies (IJRCMS) 5*(3), 60-76.

Amahalu, N.N., Ezechukwu, B.O., & Okudo, C.L. (2022). Intellectual capital and market value added of listed insurance companies in Nigeria. *International Journal of Science Academic Research, 03*(10), 4528-4533.

Efenyumi, P.M.E., Okoye, E.I. & Nwoye, U.J. (2022). Empirical Evaluation of Effects of Intellectual Capital Efficiency on Firm's Value in Some Selected Listed Firms on Nigerian Exchange Group, 3(6), 16 – 37. International Journal of Research in Social Science and Humanities (IJRSS), DOI: 10.47505/IJRSS.2022.V3.6.3

Fapohunda, T. M. (2013). The pension system and retirement planning in Nigeria. *Mediterranean Journal of Social Sciences*, *4*(2), 25–34. https://doi.org/10.5901/mjss.2013.v4n2p25

Gimba, J. T., & Anyanwu, C. C. (2022). Effect of human capital investment on financial performance of listed deposit money banks in Nigeria. *Baze University Journal of Entrepreneurship and Interdisciplinary Studies*, *1*(1), 95–103.

Gunu, U., Oni, E., Tsado, E., & Ajayi, O. (2013). Empirical study of training and development as a tool for organisational performance: Case study of selected banks in Nigeria. *Kuwait Chapter of Arabian Journal of Business and Management Review*, *2*(10), 78–87.

Ileka, N. O., & Muogbo, U. (2020). Wages and Salary Administration and Employee Performance in Selected Government Ministries in Anambra State. *International Journal of Innovative Development and Policy Studies*, *8*(1), 70–80.

Imeokparia, L., & Bola, O. J. (2020). Effect of human capital investment on financial

performance of deposit money banks in Nigeria. *Sokoto Journal of the Social Sciences*, *10*(3), 83–94.

Nangih, E., Obuah, C. A., Wali, S. C., & Turakpe, M. J. (2020). Staff Costs and Firm Profitability: Evidence from Nigeria's oil and gas industry. *European Journal of Accounting, Finance and Investment*, *6*(6), 49–58.

Nwaiwu, J. ., & Joseph, B. (2021). Human Resource Accounting Costs disclosure and quoted Performance of Upstream oil and gas in Nigeria. *International Journal on Integrated Education*, *4*(5), 174–196.

Nwauzor, C. O., & Longjohn, T. B. (2021). Human capital accounting and firm performance: A study of oil and gas firms in Nigeria. *Journal of Accounting Research*, *3*(4), 1–22.

Odunayo, A. O., & Festus, A. F. (2020). Human Resource Accounting and Quality of Financial Reporting of Quoted Oil and Gas Companies in Nigeria. *International Journal of Accounting, Finance and Risk Management*, *5*(4), 195–206. https://doi.org/10.11648/j.ijafrm.20200504.14

Okudo, C.L; & Amahalu, N.N. (2023). Effect of environmental accounting on profitability of listed oil and gas firms in Nigeria. *International Journal of Advanced Academic Research, 9*(3), 47-61.

Olatunji, K., Olufemi, L., & Omotayo, R. (2021). Effects of Fringe Benefits on Employees Productivity in selected Food and Beverages Production Companies In Ogun State, Nigeria. *Annals of Spiru Haret University, Economic Series*, *21*(2), 55–73. https://doi.org/10.26458/2122

Tamunotonye, P. G., & Ifeanyichukwu, O. O. (2022). Assessing the effect of Employee Size and Employee Cost on the Financial Performance of listed deposit money banks in Nigeria. *African Journal of Business and Economic Development, 2*(11), 86–100.

Umenzekwe, P.C., Okoye, E.I., Nwoye, U.J., Adeniyi, S.I. & Uchegbu, C.U. (2022). Voluntary Disclosures of Human Resource Management in the COVID-19 Pandemic Financial Reporting Era of Consumer and Industrial Goods Firms Listed on the Nigeria Exchange Group, Journal of Global Accounting, 8(2), 1 - 12. Available at: https://journals.unizik.edu.ng/joga