Effect of Human Capital Expenditure on the Profitability of Listed Consumer Goods Companies in Nigeria

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ABSTRACT

This study investigates the effect of human capital expenditure on the profitability of 21 consumer goods companies listed on the Nigerian Exchange Group over the 2015–2024 period. Using panel data extracted from audited annual reports. Results reveal a strong positive impact of T&D on ROA ($\beta = 18.42$, $p < 0.001$), indicating that a one-percentage-point increase in training intensity boosts ROA by 18.42 percentage points. Conversely, S&W negatively affects ROA ($\beta = -1.35$, $p = 0.002$), suggesting that wage intensity without skill enhancement erodes profitability. The findings underscore that not all human capital spending is value-accretive training drives strategic advantage, but salaries alone signal inefficiency. The study recommends prioritizing T&D investments and linking salary growth to skill development to optimize long-term profitability in Nigeria's consumer goods sector.

Keywords: Human Capital Expenditure, Training and Development, Salaries and Wages, Profitability, Return on Assets

INTRODUCTION

The going concern of a business depend largely on how well its managements are able to effectively harness organizations' resources to ensure stability of its business operations in order to prevent liquidation in the current technologically advanced and dynamic business world. Increase adoption of technology has led to dynamism in the ways consumer goods companies are being managed which is as a result of the important roles it plays in the achievement of organizations' objectives in this period of competitive business environment. They tends towards being creative in this era of increased changes in technology by shifting to be innovation oriented organizations where skill, knowledge and attitude is of paramount. The performance of consumer goods companies therefore lies in its managerial capability to ensure proper navigation into the changing business environment (Ovedje & Iserien, 2021).

These managerial capability is embedded in the intellectual asset of the organization which is its human capital. Human capital being a viable component of an organization has been described as an instrument of promoting competitive development among companies in that where there is human development, the qualitative and quantitative progress of such organization is inevitable (Okere & Igba, 2023). This irreplaceable asset of the organization plays a crucial role in driving the organization towards the achievement of its objectives. This is because a company's human capital is a fundamental determinant of its performance and every other assets owned by an organization cannot function effectively without human initiatives (Bawono, 2021). Despite the increase adoption of Artificial Intelligent, human intellect can not be underestimated all because human reasoning is the backbone of the achievements of any technological evolution irrespective of how vast it is including Artificial Intelligent. As a result of the increased adoption of technology, organizations needs to focus on new pathways to thrive in the face of technological challenges by developing human imagination to reshape their operations for sustainable development. in this age of innovation advancement.

For organization to therefore adapt to this new pathways of development, the major competitive weapon required is to consciously leverage on their workforce by improving largely on the recruitment of people with

high level of intellectual competence and the readiness to be skilled. In doing this, there is need for firms to expend on their intellectual assets to enhance their skills and competences through training and development, compensations and also ensure a conducive working environment. All these aforementioned expenses incurred for the improvement of employees brought about human capital expenditure.

Human capital expenditure being an unavoidable cost in having a competent workforce in an organization, can be describe as the transformation of individual competence into highly productive human capital in monetary values which relates to the amount spent on employee training, development and skills acquisition with the effective input of health and moral values. (Nduka, Mark & Idayat, B.A 2024) describe such investment as needful as it brings about the achievement of competitive advantage and other important indicators of profitability. There is therefore the need for consumer goods companies to make informed decisions when it comes to their stock of human capital. Consumer goods companies are firms that invested their resources to produce items that are intended for direct use by end users with the aim of viable return on their investments. In this present knowledge driven century, it is necessary for consumer goods companies to see human capital as a viable component of its operations and utilize it in such a way that will not make its success to be at stake (Ogunbiyi, Alao, Aremu & Olalere, 2023) affirms that, this can be achieved by ensuring the human capital that will drive the economy of listed consumer goods companies be recognized as a valuable part of the total value of an organization in order to assess the effect it has on the corporate profitability. For companies to therefore have adequate valuation, the cost incurred must be adequately classified because some of the benefits derived from the cost incurred on human span more than one accounting period.

For consumer goods companies and all companies at large to remain in operation for the foreseeable future, its human capital remains the most important factor as these companies are key determinants of economic long term growth, development and sustainable practices for Nigeria. The need for this sector to adequately bring about innovations in their operations is highly paramount as there success has positive impact on them as an entity and the Nigeria economic development in general while failure on the other hands is disastrous to their going concern and economic growth of the nation. (Tatiana, 2024) in World Bank Support Forum emphasizes the need for leaders to prioritize investment in human capital by quantifying the impact of training and development on productivity.

Market experts, policy makers, investors, financial market participants and stakeholders perceived human capital as the major driver of performance and growth. This is because they attach importance to the skills and expertise of highest echelon of an organization as the stock market reacts to any change of management. Yet this highly valued capital is not recognized in the statement of financial position as assets. (Abraham, Odobi & Enwuchola, 2022). They treated the total cost incurred on human capital as expense in the statement of comprehensive income. Charging the expenditure on human capital as expense in a statement of comprehensive income was traceable to the inability of organizations to separate the expense element (salaries, wages, commission bonus, maintenance, allowances) from the capital expenditure element (acquisition, recruitment, training, development and retraining). This has created an obvious gap as it will affect the real profitability of the organizations. (Ovedje & Iserien,2021).

Also, most consumer goods companies fall short of their role in ensuring that the cost incurred on their stock of knowledge adequately match the period in which it was incurred. This could be due to the fact that consumer goods companies has not really dive into justifications for the place of knowledge, skill and attitude in relation to profitability considering the technology driven era which has digitalize the economy. This study therefore becomes needful as the rate at which organizations expend on their competent and quality staffs to train and retrain them does not really match their rate of growth in returns. Hence, the main objective of this study is to determine the effect of human capital expenditure(Training and Development; Wages and Salaries) on the profitability of listed consumer goods companies.

LITERATURE REVIEW

Human capital as a concept was first developed by Sir Williams Pretty in the year 1691. The research into it began in 1960 by Rensis Likert (Becker, 1964). (Becker, 1976) described knowledge and skills as values that can be accumulated in different forms of education, training and development.

Learning through Education and training is very crucial to bringing about the value and uniqueness embedded in human. (Kwon, 2019) cited by (Ileka & Muogbo, 2020) characterized human capital as ; expandable, self generating, transportable and shareable. The expandable and self generating characteristics of human capital can be said to mean the possibility that the stock of knowledge increases individual human capital. While the transportable and shareable characteristics can be likened to the ability of an individual to be able to impact the knowledge acquired into others inform of training.

Classification of Human Capital Expenditure

The combined effort of an organization in monetary terms to bring out the best out of its employee in an efficient and effective human capital that will drive the organization to the achievement of its objective can be said to be human capital expenditure. The cost incurred by an organization on its employee is what it sacrificed to achieve its aim. Such cost include Training and development, Salaries and Wages, bonuses, contributory pension, health and welfare costs. According to (Ifrueze, 2014) cited by (Balogun & Omotoye, 2020). Expenditure on human capital are usually capital and revenue in nature. Capital expenditure is that which provides benefits that is beyond the current accounting period such as Training and Development while revenue expenditure is that which provides benefits during the current accounting period such as Salaries and Wages.

Measures of Corporate Profitability

Corporate profitability is often evaluated by the use of profitability ratios. Profitability ratios measures the operating success of a company for a given period of time and in measuring the returns of a firm in relation to either sales, assets or shareholders equity and are usually given in percentages. (Ovedje & Iserien, 2021) . These ratios are important for a company's ability to obtain debt and equity financing. It also provides information to management about specific areas of business that need attention and to access the economic condition of a firm.

There are many different profitability ratios that measured profitability; the following are three of the most common.

Net Profit Margin

The net profit margin measures the financial value of sales and indicate management efficiency in production and sales of its products. Net profit margin is measured by expressing the net profit as a percentage of sales that is, net profit divided by sales multiply by one hundred. The higher the rate of return, the more net sales are providing income to the business. If the net profit is relatively low, it may imply management's inability to manage its activities efficiently. Therefore, a high ratio is more desirable. (Kinuthia, 2020).

Return On Assets

Return on assets measures the efficiency with which a firm has utilized the total funds provided by the creditors and owners of the firm in generating profit. Therefore measuring the company's success in using its asset to earn a profit can be expressed as net profit divided by total assets the higher the ROA, the better for all capital suppliers. Is the ratio of net profit to total asset. (Abraham, Odobi & Enwuchola, 2022).

Return On Owners Equity (ROE)

Return on owner's equity is one of the important measures in financial analysis and the most widely used measure of corporate profitability. This ratio showed the relationship between net income and common shareholders' investment in the company. That is how much income is earned by a company from every naira invested by the common shareholders. It indicates how efficiently a firm has used the resources of the shareholders' equity (Agbi, Popoola & Edem 2020) . A low ratio may imply management is not satisfying its function and main objective of maximizing the owners' wealth.

Looking at the above three measures of corporate profitability, one can conclude that corporate profitability can be calculated in several ways . in each case a measure of profit is the numerator and the denominator varies, that is, dividing by sales generates profit margins, dividing by shareholders equity produces return on equity, while dividing by total assets produces return on investment.

Theoretical Review

Resourced- based Theory

The Resource-Based Theory was first propounded by Birger Wernerfelt (1984).The framework was later expanded and popularized by Jay Barney (1991).They posits that organizational performance differences arise from the possession and effective deployment of resources that are Valuable, Rare, Inimitable, and Organized (VRIO). The theory explained further that incurring high labour costs in the form of salaries and wages does not automatically yield superior performance but that superior performances can only be met when the ability of a firm to convert compensation into enhanced motivation, commitment and productivity through complimentary management effort such as training and development is show cased. The theory argued that salaries and wages represent a necessary but not sufficient investment in human capital. When firms pay higher wages without corresponding mechanisms to enhance skill utilization such as structured training, effective supervision, or technology adoption these expenses may simply inflate operating costs without generating proportional productivity gains. Therefore, the relationship between salaries and wages and return on assets could be negative or neutral in the absence of complementary human resource development strategies (Youndt & Snell, 2004).

Resource Based Theory further explained that while compensation is essential to attract and retain employees, it enhance performance only when complemented by other value-creating human resources practices. Without such complementary, salaries and wages may simply increase costs, thereby diluting firm profitability and reducing ROA.

Resource-Based theory affirms that firm performance depends not merely on resource possession such as increased compensation but on resource orchestration which means the strategic combination of salary structures, training programs, and performance management systems that together create unique human capital advantages. Therefore, for salaries and wages to meet the VRIO criteria to become strategically valuable, it must be integrated with broader human resource development initiatives such as training and development (Grant, 1996) cited by (Ogunbiyi, Alao, Aremu, & Olalere,2023).

Human Capital Theory

Human capital theory was originally propounded by Schultz (1961) and later developed by Becker (1964) and Mincer (1974). The theory placed high value on the employees in the organization by describing them as human capital. It sees problem solving abilities in human which contribute to both short and long term firm performance and therefore rests on the assumption that formal training and developmental programs are highly instrumental and necessary to improve the productive capacity of a population. Human capital theorists also argue that a skilled population is a productive population in that the investment in people's knowledge, skills and competencies through training and development increase the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability.

According to (Becker, 1964), expenditures on training and employee development constitute a form of capital formation that improves the productive capacity of the workforce. Organizations that allocate resources toward training and development are essentially investing in assets that appreciate over time through enhanced employee output and innovation. (Zhou, Zhang & Montoro-Sánchez, 2018) also confirmed that human capital investment, especially in skill development, leads to improved organizational performance through enhanced innovation capacity, operational efficiency, and employee commitment. The study emphasized that investment in employee training is not just an ordinary cost, but a strategic driver of organisational competitveness and sustainable performance.

The theoretical linkage to the expected positive effect of training and development can be framed in three dimensions. The first is that it brings about quality output and fosters innovations which lead to proficient at executing tasks, adapting to technological changes, creation of superior quality, adopt and leverage on new technologies faster and contributing to operational efficiency that can command higher return on asset. The second dimension is that training and development enhances labor productivity. Higher labour productivity as a result of better utilization of assets allows skilled employees to use tangible and intangible assets more efficiently, thereby increasing revenue relative to return on asset. Third, training and development reduces employee turnover and recruitment costs. Effective training raises job satisfaction and retention thereby lowering operational expenses and stabilizing the workforce which will eventually contribute to sustained profitability. The above dimensions brought together, is expected improve utilization of resources and thereby generate higher profitability levels for organizations which invest more in training and development and also imply that positive returns should be expected in financial performance metrics such as return on asset.

Empirical Review

To empirically analyse this study, previous research work in relation to the study will have to be reviewed to know the extent to which research has been conducted in this area of study and their various findings, results and recommendations (Hasan ul & Naeem 2022) in their study assessed how the number of employees and staff cost affects the financial outcomes of textile enterprises listed on the Pakistan Stock Exchange. The study utilized an ex post facto analysis methodology and obtained data from the financial statements of 73 organizations over a five-year period from 2017 to 2021. Panel regression analysis was performed using E-views software. The Breusch-Pagan test was employed to measure the heterosedasticity of regression errors and then the Hausman test is utilized to determine the best approach between a fixed effect and a random effect. The findings revealed that staff cost positively affects financial performance, whereas the number of employees significantly negatively affects financial performance. Therefore, the study recommends investing in employees to boost the firm's profitability. Also, accounting standards and disclosures should be incorporated into human resource accounting.

(John & Roseline, 2023) Viewed the influence of human capital on the profitability of companies in the consumer goods sector in Nigeria. With a population of 21 firms in the consumer goods sector, a sample size of 17 firms listed on the Nigerian Exchange Group Plc as of December 31, 2022 was selected using purposive sampling techniques. To achieve the objectives, an ex-post facto research design was adopted involving manual generation of data from the annual reports of the selected firms. The study period spanned from 2013 to the 2022 financial year. The data obtained were analysed using descriptive and inferential statistics, specifically through simple regression techniques. The profitability of companies in the consumer goods sector was measured by return on assets. Results revealed that human capital has a significant positive influence on the return on assets. This result was evidenced by a beta coefficient of 0.520 and a probability value of 0.000. It was concluded that, with adequate human capital, firms' profitability is enhanced in the long run. Since human capital is an aspect of integrated reporting and is based on worldwide best practices, it was recommended that human capital should be considered a main area of interest when preparing annual reports for businesses. This is because the reports are intended for stakeholders, who are the primary resource providers.

(Nduka, Mark & Idayat, 2024) carried out a research on the effect of human capital expenditure on financial performance of listed consumer goods firms in Nigeria. The study aimed at determining the effect of human capital expenditure on financial performance of listed consumer goods firms in Nigeria. The study population consisted of twenty (20) listed consumer goods firms in Nigeria. The study used purposive sampling technique. Secondary source of data was used in compiling its findings. The independent variable is conceptualized as human capital expenditure, while the dependent variable is financial performance. The study concluded that the extent of the effect of human capital expenditure on financial performance in Nigeria is very weak and insignificant. The implication of this result is that the extent to which consumer goods firms in Nigeria embark on human capital expenditure does not significantly and positively improve the financial performance. The study recommended that the management of consumer goods firms in Nigeria should invest in the acquisition of technical capacity skills needed by their employee, which has the potential of improving the financial

performance by the company. However, the accounting treatment and disclosures of this amount still needs to be standardized.

Being one of the variables used in determining expenditure on human capital, employees training and skill development is one of the key human capital expenditure (Makgata & Ngwakwe 2017) evaluated the the relationship between training and development and profitability of companies in Nigeria. The study evaluated how productivity can be improved through investment in training and development of employee which will result in increased profitability of the firm. The research work evaluates the relationship between employees' training and development and profitability. The study apply quantitative approach. Correlation statistics was used to analyse the secondary data collected over a period of 5 years. (2011- 2015) from the archives of selected companies The profitability of a quoted company is a function of its human capital and the quality of the human capital is also a function of Training and Development (T&D) which is cost to the organization. Some recent researchers have argued whether the human capital cost and profitability of quoted companies are of positive or negative relationship. (Kinuthia, 2020) analyzed the positive relationship between human capital expenditure and profitability in that expenditure on education, training and development increased productivity over twice the size of the wage increase in the trainee. This is because not all productivity gain brought about by training is compensated by increase in individual remuneration, thereby making such investment remain profitable for the organizations.

(Okere & Igba, 2023) in their investigated the relationship between Human Capital expenditure on salaries and wages and Financial Performance of listed Manufacturing firms in Nigeria. Panel research design was used for the study. The data used were sourced from twenty (20) listed manufacturing firms in Nigeria, quoted on the Nigerian Stock Exchange from 2009-2018. The data extracted were analyzed using the panel data regression analysis, descriptive method and Hausman test was used to determine the most appropriate model. The study shows that there is a non-significant but positive relationship that exists between Human Capital cost of salaries and wages and Financial Performance of manufacturing companies in Nigeria. Investing in Human Capital shows a significant negative relationship with financial performance of manufacturing firms in Nigeria. The study recommends that Companies should come up with some effective plans especially in investing the various aspects of human capital as not only does it direct firms to attain greater performance but also it ensures firms to remain competitive for their long term survival. This can be achieved by stipulating that the understanding of firm performance in relation to human capitals should not be regarded as a phenomenon that only adds 'more zeros' in a firm's profits; it should be seen as an entire workforce as the most valuable assets in order for the organization to pave ways for greater achievements via innovations and creativity.

METHODOLOGY

The study area covered all the consumer goods companies listed on the Nigeria Exchange Group. The study is analytical in nature where panel regression was used to analyse the financial statement of the organizations under studied. The study made use of secondary source of data gathered from the audited annual report and financial statement of the listed consumer goods companies in Nigeria. The total consumer goods company listed on the Nigeria Exchange Group as at 31st Dec., 2024 were Twenty-one(21) in number. The study covered a period of Ten (10) years from 2015 to 2024 for it to have true representation of the sector. Variables measured are dependent variable, Independent variables and control variables. Profitability was measured by Return On Asset (ROA), Human Capital Expenditure (HCE) was measured using the ratio of employee-related expenses (training and development) to total expenditure and Human Capital Expenditure (HCE) (salaries and wages) to total expenditure. The Control Variables was measured using Asset Tangibility (AT) and Liquidity(LIQ).

Model Specification

The econometric model for the study is specified as:

$$PROF\_it = \beta0 + \beta1HCE\_it + \beta2AT\_it + \beta3LIQ\_it + \varepsilon\_it$$

Where:

PROF_it = Profitability of firm i at time t (ROA)

HCE_it = Human Capital Expenditure (T and D , S and W)

AT_it = Asset Tangibility

LIQ_it = Liquidity

ε_it = Error term

RESULTS AND DISCUSSION

Descriptive Statistics

In the context of examining the impact of human capital expenditure on the profitability of listed consumer goods companies in Nigeria, the descriptive statistics provide a foundational overview of the dataset, encompassing 210 observations across a 10-year period from 2015 to 2024 for 21 firms. These statistics illuminate the central tendencies, variability, and distributional characteristics of the variables: Return on Assets (ROA) as the proxy for profitability (dependent variable), Salaries and Wages (S&W) and Training and Development (T&D) as components of human capital expenditure (independent variables), and Liquidity (LIQ) and Asset Tangibility (AT) as control variables. Here is an analysis and interpretation of each variable's descriptive statistics.

The mean value of Return on Assets (ROA) is 7.05, with a median of 6.50, a minimum of 0.50, and a maximum of 18.00. This suggests that, on average, listed consumer goods companies in Nigeria generated approximately 7% returns on their total assets during the period under review. The closeness of the mean and median indicates a relatively balanced distribution, though the skewness (0.97) implies a moderate positive skew meaning some firms achieved higher profitability levels compared to the industry average.
The standard deviation (3.36) reflects moderate variability in profitability among firms, showing that not all companies achieved consistent performance. The kurtosis value of 3.89 suggests a slightly leptokurtic distribution, meaning that extreme profitability values occurred more frequently than would be expected under a normal distribution. The Jarque-Bera statistic (40.14, $p < 0.01$) confirms that ROA is not normally distributed, implying some outliers in firm profitability performance across the study period.

The mean of Salaries and Wages is 4.95, with a median of 4.90, minimum of 3.00, and maximum of 7.50. These values indicate that salaries and wages constitute a moderate share of total expenditure among listed consumer goods firms. The closeness of the mean and median values again suggests a relatively symmetric distribution, corroborated by the low skewness value (0.27). The standard deviation (1.03) indicates slight dispersion, implying that firms' spending on salaries and wages does not vary widely across the sector. The kurtosis (2.20) shows a platykurtic distribution—flatter than the normal curve—indicating fewer extreme salary and wage expenditures. The Jarque-Bera test (8.21, $p = 0.016$) suggests a slight deviation from normality, meaning that while the data are close to being normally distributed, there are minor asymmetries possibly due to firm size or differing human resource structures.

The mean of Training and Development expenditure is 0.41, with a median of 0.40, minimum of 0.10, and maximum of 0.90. This shows that, on average, listed consumer goods companies spend less than 1% of their total expenditure on employee training and development. This low figure indicates that Nigerian consumer goods firms generally allocate minimal resources to human capital enhancement activities such as workshops, skill acquisition, or professional training. The standard deviation (0.14) reveals low dispersion, suggesting consistent under investment in training and development across firms. The positive skewness (0.73) indicates that while most firms spend relatively little on training, a few allocate significantly higher proportions of their budgets to it. The kurtosis (4.38) shows a leptokurtic distribution, implying that extreme values (firms that spend much more or much less) are more common than in a normal distribution. The Jarque-Bera statistic

(35.12, $p < 0.01$) confirms that the data are not normally distributed, likely due to the presence of a few firms with substantially higher training investments.

The mean liquidity ratio is 1.38, with a median of 1.35, minimum of 0.85, and maximum of 2.00. This indicates that, on average, listed consumer goods companies have a moderately strong ability to meet short-term obligations, as their current assets slightly exceed current liabilities. The standard deviation (0.22) implies low variability in liquidity levels among firms, suggesting relatively stable short-term financial health across the sector.
The skewness (0.31) and kurtosis (2.89) values show that liquidity is approximately normally distributed, with a slightly right-skewed and mesokurtic pattern. The Jarque-Bera statistic (3.54, $p = 0.17$) shows an insignificant probability value, indicating that the liquidity variable is normally distributed. This normality suggests that liquidity management practices among the sampled firms are relatively consistent and do not vary dramatically.

Asset Tangibility has a mean of 53.36, a median of 53.75, a minimum of 30.00, and a maximum of 77.50. These figures indicate that, on average, fixed assets constitute about 53% of total assets for the sampled companies, reflecting the capital-intensive nature of consumer goods production. The standard deviation (10.95) indicates substantial variation, suggesting that while some firms are heavily asset-based, others maintain a more flexible, less capital-intensive structure. The skewness (0.06) shows near symmetry, while the kurtosis (2.09) suggests a platykurtic distribution, indicating that extreme values are less frequent. The Jarque-Bera test (7.41, $p = 0.0247$) reveals that the variable slightly deviates from normality. However, the near-symmetry and low dispersion indicate that most firms in the sector share similar asset structures.

Overall, the descriptive statistics reveal that profitability (ROA) and human capital expenditure (S&W and T&D) vary across listed consumer goods firms, although liquidity and asset tangibility are relatively stable. The data exhibit mild departures from normality, with most variables showing positive skewness suggesting that a few firms perform better or invest more than the average. Notably, the low mean for training and development underscores limited investment in employee capacity-building, which may have implications for long-term profitability and productivity within Nigeria's consumer goods sector.

Table 1: Descriptive Statistics

	ROA	**S&W**	**T&D**	**LIQ**	**AT**
Mean	7.045238	4.945238	0.409762	1.375381	53.36429
Median	6.500000	4.900000	0.400000	1.350000	53.75000
Maximum	18.00000	7.500000	0.900000	2.000000	77.50000
Minimum	0.500000	3.000000	0.100000	0.850000	30.00000
Std. Dev.	3.355664	1.031977	0.140901	0.215984	10.95180
Skewness	0.974734	0.271029	0.726036	0.313513	0.060629
Kurtosis	3.887115	2.196962	4.380325	2.891601	2.088078
Jarque-Bera	40.13971	8.213590	35.12086	3.542990	7.405168
Probability	0.000000	0.016460	0.000000	0.170079	0.024660
Sum	1479.500	1038.500	86.05000	288.8300	11206.50
Sum Sq. Dev.	2353.440	222.5802	4.149288	9.749620	25067.88
Observations	210	210	210	210	210

Source: Researcher's Computation (2025)

Test of Variables

In table 2, this section conducts essential pre-estimation and post-estimation tests to ensure the reliability and validity of the research findings. Pre-estimation tests like the unit root test and correlation analysis check for data stationarity and multicollinearity, while post-estimation tests such as the Hausman and heteroscedasticity tests confirm model robustness and address variance inconsistencies.

Unit Root Test

The ADF test statistic for ROA is 76.8281 with a corresponding p-value of 0.0000, indicating statistical significance at the 1% level. This result implies that the null hypothesis of a unit root is rejected. Therefore, ROA is stationary at first difference, denoted as I(1). This means that after first differencing, the profitability of firms, as measured by Return on Assets, exhibits a stable mean and variance over time. The stationarity of ROA ensures that the profitability trends across the sampled firms are consistent enough to allow meaningful analysis of the influence of human capital expenditure. For Salaries and Wages, the test statistic is 69.6190 with a p-value of 0.0000, which is also significant at the 1% level. This suggests that the series is stationary after first referencing, implying that fluctuations in salary and wage expenditures stabilize over time. In practical terms, this means that although salary and wage levels may vary across firms and years, their growth or change rate tends to revert to a stable mean. Thus, S&W is integrated of order one, I(1), confirming its suitability for inclusion in the panel regression model. The Training and Development variable records an ADF statistic of 109.562 with a p-value of 0.0000, confirming strong statistical significance. Like the other variables, T&D is stationary at first difference, i.e., I(1). This result indicates that variations in firms' training and development expenditures are not random but trend around a consistent long-term mean after first differencing. The implication is that although some firms may periodically increase or reduce spending on training, the overall pattern of investment in employee development across the sector remains stable over time.

The Liquidity ratio shows an ADF statistic of 79.6442 with a p-value of 0.0018, which is also significant at the 1% level. This means that liquidity is stationary at first difference, denoted as I(1). Therefore, short-term solvency or the ability of firms to meet current liabilities using current assets remains stable after differencing. This stability suggests that listed consumer goods companies generally maintain a consistent liquidity policy over the years, despite occasional fluctuations due to market or operational factors. Asset Tangibility records a test statistic of 61.3188 and a p-value of 0.0031, indicating significance at the 1% level. The result shows that AT is stationary at first difference (I(1)), meaning that the proportion of fixed assets to total assets in consumer goods firms stabilizes after initial variation. This finding suggests that while companies might adjust their asset structures occasionally due to expansion, divestment, or revaluation, the overall ratio remains stable in the long run.

The results of the unit root test indicate that all variables—ROA, S&W, T&D, LIQ, and AT are stationary at first difference, I(1). This uniform order of integration is desirable for panel data econometric analysis because it allows for meaningful long-run relationship testing (such as co-integration) and ensures that the regression estimates are valid and non-spurious. The presence of stationarity at first difference implies that while the raw series of the variables may exhibit trends or random walks over time, their difference forms are stable and reliable for further statistical estimation. ADF test confirms that all the variables possess the required statistical properties for panel regression analysis. This validates the appropriateness of using a first-difference transformation or other panel estimation techniques, such as Fixed Effects or Random Effects Models, in examining the effect of human capital expenditure on profitability among listed consumer goods companies in Nigeria.

Table 2: Unit Root Test [ADF Test with Intercept Only]

Variable	T-Statistics	P-Value	Order of Integration	Decision
ROA	76.8281	0.0000	I(1)	Stationary
S&W	69.6190	0.0000	I(1)	Stationary
T&D	109.562	0.0000	I(1)	Stationary
LIQ	79.6442	0.0018	I(1)	Stationary
AT	61.3188	0.0031	I(1)	Stationary

Source: Researcher's computation (2025)

Correlation Matrix

The correlation coefficient between ROA and T&D is 0.898, which is positive and highly significant at the 1% level ($p < 0.01$). This strong correlation suggests that increases in expenditure on training and development are

associated with higher profitability among listed consumer goods firms. The relationship implies that investment in employee capacity-building, skills acquisition, and professional development translates to enhanced productivity, efficiency, and ultimately, improved firm performance. This result supports the theoretical premise that human capital development contributes meaningfully to a firm's value creation and profitability. The correlation between ROA and S&W is 0.750, also positive and significant at the 1% level ($p < 0.01$). This indicates a strong direct relationship between employee remuneration and profitability. The implication is that firms that invest adequately in compensating their employees through competitive salaries and wages tend to achieve better financial performance. Proper remuneration likely motivates employees, enhances job satisfaction, and reduces turnover, which collectively improve operational efficiency and profitability. This finding aligns with the view that salaries and wages are not merely expenses but strategic investments in human capital that yield financial returns.

The correlation coefficient between ROA and AT is 0.073, which is positive but not statistically significant ($p = 0.290$). This suggests a very weak relationship between asset tangibility and profitability. The lack of significance indicates that the proportion of fixed assets in total assets does not have a notable effect on profitability among listed consumer goods firms. This may be because profitability is more driven by efficient use of both tangible and intangible resources, particularly human capital, rather than merely holding large physical assets.

The correlation between ROA and LIQ is 0.563, which is positive and significant at the 1% level ($p < 0.01$). This moderately strong relationship implies that firms with higher liquidity levels that is, those capable of meeting short-term obligations tend to be more profitable. Adequate liquidity ensures smooth operations, reduces financial distress risk, and provides flexibility to seize investment opportunities, all of which enhance profitability. However, excessively high liquidity may suggest underutilized assets, so the optimal balance is key for sustainable profitability. The correlation between T&D and S&W is 0.913, which is very strong and significant at the 1% level ($p < 0.01$). This indicates that firms that spend more on training and development also tend to spend more on salaries and wages. The relationship suggests that both variables complement each other as components of human capital expenditure. Firms that prioritize employee compensation are also likely to invest in their professional growth, reflecting a holistic human resource strategy aimed at maximizing productivity and profitability. The correlation coefficient between T&D and AT is 0.202, significant at the 1% level ($p = 0.003$). Although the relationship is relatively weak, its positive sign indicates that firms with higher tangible assets may allocate slightly more resources toward training and development. This may be due to the need for skilled personnel to manage and operate tangible production assets effectively in capital-intensive consumer goods companies.

The relationship between S&W and AT is 0.236, significant at the 1% level ($p = 0.001$). This weak positive relationship suggests that firms with larger tangible assets also tend to have higher salary expenses, possibly due to the need for more technical or operational staff to manage these assets. However, the relatively low magnitude of correlation implies that while the relationship exists, it is not a dominant factor in determining wage expenditure. The correlation between AT and LIQ is -0.341, which is negative and significant at the 1% level ($p < 0.01$). This indicates an inverse relationship between asset tangibility and liquidity. In other words, firms with higher proportions of fixed assets tend to have lower liquidity. This result is logical, as heavy investment in tangible assets such as machinery and buildings reduces the proportion of current assets available for meeting short-term obligations. This finding suggests that capital-intensive firms might face more liquidity constraints compared to those with lighter asset structures.

The correlation between T&D and LIQ is 0.485, which is positive and significant at the 1% level ($p < 0.01$). This moderate positive relationship indicates that firms with healthier liquidity positions are more likely to allocate funds for training and development activities. It implies that liquidity strength enhances a firm's ability to invest in human capital, reflecting a connection between financial flexibility and employee development initiatives. Overall, the correlation results reveal that human capital expenditure variables (T&D and S&W) exhibit strong positive and significant relationships with profitability (ROA), indicating that firms that invest more in their workforce tend to perform better financially. The control variables liquidity and asset tangibility also show meaningful but weaker relationships with profitability, suggesting that while financial and structural factors play roles, human capital remains a more critical determinant of firm performance.

Table 3: Correlation Statistics

	ROA	T&D	S&W	AT	LIQ
ROA	1				
	210				
T&D	.898**	1			
	.000				
	210	210			
S&W	.750**	.913**	1		
	.000	.000			
	210	210	210		
AT	.073	.202**	.236**	1	
	.290	.003	.001		
	210	210	210	210	
LIQ	.563**	.485**	.466**	-.341**	1
	.000	.000	.000	.000	
	210	210	210	210	210

Source: Researcher's Computation (2025)

Multicollinearity Analysis

The results from the VIF test indicate that moderate multicollinearity exists between the two human capital expenditure variables (T&D and S&W), while Asset Tangibility (AT) and Liquidity (LIQ) do not present any multicollinearity concern. The VIF values of 6.183 and 6.251 for T&D and S&W respectively are slightly above the acceptable limit of 5, implying that their effects on profitability may overlap to some degree. This finding is consistent with theoretical expectations, as both variables represent different but related aspects of human capital investment. However, since none of the variables exceeds the critical VIF threshold of 10, the level of multicollinearity can be considered tolerable and not severe enough to distort the regression estimates. The results therefore validate the continued use of all variables in the model, provided that the potential interrelationship between T&D and S&W is acknowledged in interpreting the regression outcomes.

The moderate multicollinearity observed between the two components of human capital expenditure suggests that training and development and salaries and wages are closely linked in driving profitability among consumer goods firms. Firms that invest in improving employee skills also tend to offer competitive compensation packages, reflecting an integrated human capital strategy. From a managerial perspective, this highlights that both forms of human capital investment work synergistically to enhance productivity and profitability rather than functioning as isolated factors.

Table 4: Variance Inflation Factor Test of Variables

Variable	Tolerance	VIF
T&D	.162	6.183
S&W	.160	6.251
AT	.681	1.468
LIQ	.550	1.818

Source: Researcher's computation (2025)

Regression Analysis

The panel-corrected standard error (PCSE) regression with fixed effects represents the cornerstone of the econometric analysis examining how human capital expenditure influences profitability. The model demonstrates exceptional explanatory power, with an R^2 of 0.9941 and an adjusted R^2 of 0.9933, indicating that approximately 99.3% of the variation in ROA is explained by the included variables and firm-specific

intercepts. The F-statistic of 1297.08 (p = 0.0000) confirms the joint significance of all regressors at the highest level. These metrics underscore the model's strong fit, particularly when firm-level fixed effects absorb time-invariant differences such as brand equity, management quality, or geographic advantages. The Hausman test ($\chi^2 = 22.39$, p = 0.00002) strongly rejects the null hypothesis that random effects are consistent, justifying the use of fixed effects. This implies that unobserved firm-specific factors are correlated with the regressors, and failing to control for them would bias estimates. The Likelihood Ratio (LR) test for heteroskedasticity (193.23, p = 0.0000) confirms the presence of groupwise heteroskedasticity, validating the use of PCSE over standard OLS, which would produce inefficient and biased standard errors. Thus, the reported standard errors (in parentheses) and p-values (denoted by {}) are robust to cross-sectional dependence and time-varying variances, enhancing the reliability of inference.

The coefficient of T&D is positive, highly significant, and economically large. A one-percentage-point increase in T&D expenditure as a share of total expenditure is associated with an 18.42 percentage point increase in ROA, holding all else constant. This effect is not only statistically robust but also practically transformative. Given that the mean T&D ratio is only 0.41% (from descriptive statistics), even modest increases say, from 0.4% to 0.6% would theoretically boost ROA by over 3.7 percentage points, a substantial leap in a sector averaging 7% ROA. This finding provides strong empirical support for human capital theory, particularly the knowledge-based view of the firm. Investments in training enhance employee skills, adaptability, and innovation, translating into operational efficiency, product quality, and market responsiveness key drivers in Nigeria's competitive consumer goods landscape. The magnitude suggests that T&D acts as a strategic lever, amplifying asset productivity far beyond its cost.

Surprisingly, the coefficient of S&W is negative and statistically significant at the 1% level. A one-percentage-point increase in S&W ratio is associated with a 1.35 percentage point decrease in ROA. This counterintuitive result challenges efficiency wage theory and appears to contradict the strong positive bivariate correlation (r = 0.750). However, multicollinearity diagnostics provide the key to reconciliation. Despite VIFs of ~6.2 for both T&D and S&W, the fixed effects model combined with PCSE successfully parses their joint influence. The negative S&W coefficient likely reflects a suppression effect: when T&D is controlled for, higher salary intensity (without corresponding skill enhancement) signals cost inefficiency or overstaffing. Firms paying high wages but underinvesting in training may suffer from low productivity per employee, eroding profitability. In contrast, the positive T&D effect dominates when both are included, suggesting that training is the value-adding component, while salaries alone may represent a drag unless paired with skill development.

The coefficient of LIQ is positive and highly significant, indicating that a one-unit increase in the current ratio (e.g., from 1.3 to 2.3) is associated with an 8.14 percentage point rise in ROA. This powerful effect underscores liquidity's role as a financial enabler. Firms with stronger working capital positions can seize growth opportunities, manage supply chain disruptions, and avoid costly short-term borrowing all critical in Nigeria's volatile economic environment. Liquidity also likely facilitates human capital investment, acting as a mediating channel between financial health and profitability. The coefficient of AT is negative and significant at the 5% level. A one-percentage-point increase in fixed assets to total assets reduces ROA by 0.039 percentage points. Though small in magnitude, this suggests that over-reliance on tangible assets may hinder profitability in this sector. Consumer goods firms competing on speed, branding, and flexibility may find heavy fixed asset bases inflexible and capital-intensive, tying up resources that could be deployed more productively elsewhere (e.g., marketing or R&D). This aligns with the weak correlation between AT and ROA (r = 0.073, insignificant). Constant negative intercept, significant within the fixed effects framework, reflects the baseline ROA when all regressors are zero adjusted for firm-specific effects. Its interpretation is limited but confirms the model's structural validity.

Table 5: Panel-Corrected Standard Error Regression Results

Variable	Fixed Effect Model
C	-2.935671* (0.603235) {0.0000)

T&D	18.42254 (2.730993) {0.0000}
S&W	-1.350215 * (0.421910) {0.0016}
AT	-0.039063 (0.015486) {0.0125}
LIQ	8.138665 (0.716848) {0.0000}
R^2	0.994092
Adjusted R^2	0.993326
F-statistic	1297.080
Prob(F-stat)	0.000000
Heteroskedasticity LR Test	193.2301
Prob(Heteroskedasticity)	0.000000
Hausman Test	22.390139
Prob(Hausman Test)	0.00002

Source: Researcher's computation (2025) * sig @ 5%, *( ) standard error { } p-values.

DISCUSSION OF FINDINGS

The strongly positive and economically significant effect of T&D on ROA (β = 18.42, p < 0.001) aligns unequivocally with theoretical expectations and several prior studies. (Makgata & Ngwakwe, 2017) found a positive correlation between T&D and profitability, arguing that enhanced employee skills drive productivity and consequently financial performance. Similarly, (Kinuthia, 2020) demonstrated that training investments yield productivity gains exceeding wage increases, creating a net profitability surplus for firms. The current study's magnitude—where a one-percentage-point increase in T&D expenditure ratio boosts ROA by over 18 percentage points far exceeds typical effect sizes but is plausible given the low baseline T&D intensity (mean = 0.41%). This suggests that Nigerian consumer goods firms operate in a human capital-constrained environment, where marginal investments in skill development generate outsized returns due to diminishing marginal costs of inefficiency. The result also resonates with (John & Roseline, 2023) who reported a significant positive influence of aggregated human capital on ROA (β = 0.520, p < 0.001) in a similar sector and sample frame. However, the current study's disaggregation of T&D from S&W reveals that training is the primary driver of this positive effect, a refinement absent in John & Roseline 's composite measure.

In contrast, the negative and significant effect of S&W on ROA (β = -1.35, p = 0.0016) presents a striking divergence from several studies and initial bivariate correlations (r = 0.750). (Hasan ul & Naeem, 2022) found that staff cost positively affects financial performance in Pakistan's textile sector, while (Okere & Igba 2023) reported a non-significant but positive relationship between salaries and wages and financial performance in Nigerian manufacturing firms. (Nduka, Mark & Idayat, 2024), using a similar consumer goods sample, concluded that overall human capital expenditure has a weak and insignificant effect on performance. These discrepancies are reconciled through the lens of multicollinearity and model specification. The current study's inclusion of both T&D and S&W in a multivariate fixed effects framework coupled with PCSE to address heteroskedasticity successfully isolates the conditional effect of salaries. When T&D is controlled for, higher S&W intensity reflects cost inefficiency, overstaffing, or wage inflation without skill complimentary, eroding profitability. This suppression effect explains why S&W appears beneficial in bivariate or aggregated models but detrimental when training is accounted for. (Hasan ul & Naeem 2022) positive staff cost effect may thus capture firms where high wages are paired with skill development, while Okere & Igba, s non-significance reflects manufacturing's different labor dynamics (e.g., lower skill intensity).

The negative coefficient on Asset Tangibility (AT) ($\beta = -0.039$, $p = 0.0125$) and strongly positive effect of Liquidity (LIQ) ($\beta = 8.14$, $p < 0.001$) further contextualize the findings. The liquidity result supports (Hasan ul & Naeem, 2023), who implicitly link financial flexibility to human capital deployment. High liquidity enables sustained T&D investment even during economic shocks (e.g., Nigeria's 2020 recession), amplifying its profitability impact. The negative AT effect suggests that capital-intensive structures constrain agility in a sector where consumer preferences shift rapidly, reinforcing the primacy of human over physical capital. Critically, Nduka, Mark & Idayat, despite using nearly identical data (20 firms, 2010s–2020s) found human capital expenditure insignificant. This contradiction likely stems from aggregation bias: combining T&D and S&W into a single variable masks their opposing effects. The current study's disaggregation, supported by VIF diagnostics (6.18 and 6.25), demonstrates that lumping human capital components obscures critical heterogeneity. Similarly, Hasan ul & Naeem 's finding that number of employees negatively affects performance aligns with the current S&W result: both suggest that scale without skill erodes efficiency.

The policy and managerial implications are sharpened by these comparisons. While (Nduka, Mark & Idayat, 2024). and (Okere & Igba, 2023) recommend technical skill acquisition, the current findings provide quantitative urgency: a 0.2 percentage point increase in T&D could offset a 2.7 percentage point S&W increase in profitability drag. (John & Roseline 2023) call for human capital disclosure in integrated reporting is validated, but the results demand granular reporting of T&D versus compensation to guide investor scrutiny. The current analysis resolves apparent contradictions in the literature by demonstrating that not all human capital expenditure is created equal. Training and development emerges as a high-yield strategic asset, while salaries and wages, in isolation, function as a cost liability. This dichotomy unobserved in aggregated studies underscores the necessity of disaggregated modelling in human capital research. In Nigerian consumer goods firms, the path to sustained profitability lies not in wage escalation but in targeted, measurable investments in workforce capability, supported by liquidity and unencumbered by excessive fixed asset burdens.

CONCLUSION AND RECOMMENDATIONS

This study concludes that human capital expenditure significantly influences profitability, but critically, not all components contribute equally. T&D strongly enhances ROA, while S&W diminishes it in isolation. The results reconcile apparent contradictions in prior literature by showing that aggregation masks opposing effects training creates value, but wages without skill enhancement represent inefficiency. In Nigeria's consumer goods sector, strategic investment in workforce capability, supported by financial flexibility, is the true driver of sustainable profitability.

Hence, it is recommended that given the exceptionally high return on T&D (18.42 percentage points in ROA per percentage point of expenditure), management should reallocate budgetary resources from general wage increases to structured, measurable training programs. Firms should implement skill gap assessments, technical and leadership development initiatives, and digital transformation training to maximize productivity gains. A modest increase in T&D intensity from the current mean of 0.41% to 0.6% could yield over 3.7 percentage points in ROA, far outweighing the cost.

There is need for the accounting profession to reinvent itself. This is because of the inherent deficiencies of conventional accounting which as failed to recognize the knowledge acquired by organization as non-current assets. Therefore there is need for more elaborate platform of financial reporting that could capture knowledge and other intellectual capital components.

Also, Managements of consumer goods companies should come up with an enabling organisation structure for qualified, experienced and skilled employees to fully utilise their potentials and thus reallocate funds from wages to training in the area of product differenciation, E-commerce delivery services, logistics for higher production and delivery of finished goods. This will enable the organisation to achieve higher profitability. Because the higher the human capital efficiency, the greater the profitability.

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