

Influence of Human Capital Expenditure on Tobin's Q of Listed Industrial Goods Companies in Nigeria

Oluwasesin Olayemi Deborah, Ajayi Modupe Olayinka, Adedeji E.A., Onafadeji A.O

Department of Project Management, Federal University of Technology Akure, Akure, Ondo State, Nigeria

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ABSTRACT

This study examined the influence of human capital expenditure (HCE) on Tobin's Q, the market-based measure of financial performance, among listed industrial goods companies in Nigeria. The study adopted an ex post facto research design and drew secondary panel data from the audited annual reports and accounts of thirteen (13) industrial goods companies listed on the Nigerian Exchange Group (NGX) over the fifteen-year period 2010 to 2024, yielding 185 firm-year observations. Data were analysed using descriptive statistics, Pearson correlation, a battery of diagnostic (pre-estimation) tests, and a Fixed Effects Panel Least Squares regression corrected with Panel-Corrected Standard Errors (PCSE) and cross-section weights, the Hausman test having favoured the fixed effects specification over the random effects alternative. The results show that human capital expenditure, jointly with firm-specific effects, exerts a statistically significant overall influence on Tobin's Q (Adjusted $R^2 = 0.9839$; $F = 536.731$, $p = 0.000$), such that the null hypothesis that human capital expenditure has no significant effect on Tobin's Q is rejected at the aggregate model level. However, at the level of individual coefficients, neither training and development cost (ETDC) nor wages and salaries cost (EWSC) exerted a statistically significant direct effect on Tobin's Q once firm-specific fixed effects were controlled for, indicating that firm-specific, time-invariant characteristics, rather than any single human capital expenditure component, are the dominant drivers of cross-firm differences in market valuation. The study concludes that human capital expenditure matters for market valuation principally as part of a firm-specific bundle of resources and governance systems rather than as an independently potent expenditure line, and recommends that boards and management of listed industrial goods companies integrate human capital investment decisions with broader firm-level value-creation systems, while regulators encourage clearer disaggregated disclosure of staff-related costs to support future firm-level analysis.

Keywords: Human capital expenditure, Tobin's Q, training and development cost, wages and salaries cost, market-based performance

INTRODUCTION

The recent surge in knowledge-based economy has resulted into global recognition of the long term value creation, innovation, competencies and productivity embedded in human capability. This has made human capital to become one of the most important determinants of organizational strategic asset. As a result, organizations invest substantial financial resources on employee training, education, compensation, healthcare and welfare with the expectation that these investments will improve organizational performance and value creation.

Ogunbiyi, et al (2023), stressed the importance of human capital by referring to its uniqueness in making other resources of the organization to function effectively and that irrespective of the investment in physical and financial assets, organizational's goal may not be achieved if the organization's investment in human capital is not prioritized and recognized as the major driver of physical and financial assets to corporate value enhancement.

Financial performance remains the ultimate motive of business and key indicator of organizational's value. Organizations use various measures for the determination of their financial performance. Among such is market based indicator which can be determined by Tobin's Q. Joshua and Hussaini (2020) described Tobin's Q as a market-based financial performance measure that compares the market value of an organization's assets with their replacement cost or book value. It has become an increasingly important measure of organization's financial performance. Siraprapa et al. (2023) stated that Tobin's Q reflects investors' perceptions of a firm's future growth prospects, human capital investment, intangible assets and overall market valuation. Unlike accounting-based measures, Tobin's Q incorporates valuation and performance of a company as perceived by market participants incorporating prospective and existing investors' expectation about future earnings and their interest for investing in such company. Therefore, Tobin's Q indicates how well a company is performing in relation to the price of its share and other related items, including dividends and the number of shares in issue. Also, a higher Tobin's Q shows that investors expect the company to generate superior future returns and possess valuable strategic resources.

The industrial goods sector of the Nigeria Exchange group occupies a strategic position in Nigeria's economy by supporting infrastructure development, manufacturing activities, employment generation and industrialization. However, these companies operate in a highly competitive and volatile environment characterized by inflation, exchange rate instability, rising production costs, technological change and evolving stakeholder expectations. To remain competitive and enhance organizational value, these companies increasingly invest in human capital development as a strategic resource. (NeEma Eleyae, 2021)

Although Tobin's Q is widely recognized as a comprehensive market-based measure of firm value, limited empirical evidence exists regarding the influence of human capital expenditure on Tobin's Q within Nigeria's listed industrial goods companies. This represents a significant gap in the literature, particularly given the increasing importance of intangible assets in determining market valuation.

Also, human capital expenditure is expected to positively influence Tobin's Q as a result of investments in employee development for investors' confidence in the organization's future performance to be increased. However, despite these substantial investments in human capital by many Nigerian industrial goods companies, variations in market valuation persist, with some firms recording low market values relative to their asset base raising questions about whether investments in human capital effectively translate into improved investors' confidence and enhancing organization's value as measured by Tobin's Q. (Hauwa Saidu, et al 2023) (Izuchukwu, et al 2022).

Several empirical studies Taibat, Adebukola, et al 2024) Boluwatife J. A. Collins S. O. 2020, (Nduka, Mark & Idayat, 2024) have examined the relationship between human capital expenditure and financial performance focusing mainly on accounting-based indicators which reflect the company's Return on Assets (ROA), Return on Equity (ROE), Earnings per Share (EPS), and Net Profit Margin. However, relatively few studies have investigated the effect of human capital expenditure on market-based measures such as Tobin's Q, particularly within Nigeria's listed industrial goods sector. While these measures provide useful information about historical financial performance, they do not adequately capture investors' expectations regarding future growth opportunities and the value of intangible assets.

Therefore, this study focused on market based measures by capturing investors' valuation of organizations financial performance. This study therefore seeks to examine the influence of human capital expenditure on Tobin's Q of listed industrial goods companies in Nigeria. Hence the main objective of this study is to determine the effect of human capital expenditure(Training and Development; Wages and Salaries) on the Tobin's Q of listed industrial goods companies in Nigeria.

LITERATURE REVIEW

Conceptual Review

Human capital also known as human asset as a concept has gained considerable prominence in economics, finance and strategic management over the past several decades. Developed by Sir Williams Petty in the year 1691. The research into human capital began in 1960 by Rensis Likert. Since then, economists began to designate human capital as a personal attribute which is considered very useful in the production process. Prominent among the economists, is the award winning nobel prize-economists Gary Becker 1964 who assess the knowledge and skills of US workforce members and described it as in built value and unique traits found in them (Becker, 1976. Theodore Schultz (1961) and Gary Becker (1964), through Human Capital Theory, argued that expenditures on education, training, health, and employee development should be regarded as investments because they generate future economic benefits by enhancing workers' productivity and organizational performance.

Human Capital Expenditure

The concept of human capital expenditure is rooted in human capital theory. The economic and organizational research by scholars, Bosman, et al, (2004) stated that employees' improvement and organization success are influenced by investment in human. They further emphasized that human capital expenditure represents deliberate investments made by companies to improve employees' competencies and productivity, which is expected to influence organizational goals positively. Expenditure can be described as the cost incurred in order to accumulate a particular item or project. Human capital expenditure on the other hand can be describe as the cost incurred by an organization for the acquisition and stock of knowledge, skill and intellect for the long term survival, value creation, going concern and unique competitive vision of such organization. Okafor & Hachosim, (2022);Tadić & Barać (2022) posits that investments in education, training and skill development enhance workers' productivity and earning capacity of companies thereby contributing to overall organizational performance and economic growth. The study thereby confirmed the long term value creating role of human capital expenditure rather than its short term cost implications which clearly distinguish human capital expenditure from the usual labour cost. Human capital expenditure for this study includes: employee salaries and wages, staff training and development, According to Human Capital Theory, these expenditures increase employees' productive capacity and contribute to improved organizational performance and long-term value creation.

Therefore, human capital expenditure refers to the financial resources committed by an organization toward developing, maintaining, and enhancing the knowledge, skills, competencies, health, and motivation of its employees. Such expenditures are regarded as strategic investments intended to improve workforce productivity and organizational effectiveness.

Tobin's Q

Tobin's Q is a market-based measure of organisation's value developed by economist James Tobin. It is calculated as the ratio of a firm's market value to the replacement cost or book value of its assets. That is, Tobin's Q equals $\text{Market Value of Equity} + \text{Book Value of Liabilities} \div \text{Book Value of Total Assets}$. Eke et al (2023) stated that Tobin's Q greater than 1 indicates that The market values the company more highly than the recorded value of its assets, indicating positive growth expectations and valuable intangible assets. Tobin's Q equals to 1 indicates that the company's market value is approximately equal to the replacement value of its assets. Tobin's Q lesser than 1 indicates that The market values the firm below the recorded value of its assets, suggesting weaker growth expectations or under performance. Tobin's Q is widely used because it reflects investor expectations and captures the value of intangible assets, including human capital, innovation and organizational capabilities. Joshua & Hussaini (2020)

Human Capital Expenditure and Tobin's Q

The relationship between human capital expenditure and Tobin's Q is grounded in Human Capital Theory and the Resource-Based View (RBV). These theories posit that investments in employee knowledge, skills, and competencies create valuable and difficult-to-imitate organizational resources that enhance firm value.

Human capital expenditure can influence Tobin's Q by increasing employee productivity and efficiency. Enhancing innovation and research capabilities. Improving product quality and customer satisfaction. Strengthening organizational learning and adaptability. Increasing investor confidence in future earnings potential. Enhancing the firm's reputation and competitive advantage. As a result, firms that invest strategically in human capital are expected to achieve higher market valuations and stronger growth prospects. Siraprapa et al. (2023)

Theoretical Review

Human Capital Theory was originally propounded by Schultz (1961) and later developed by Becker (1964) and Mincer (1974). The theory placed high value on employees within the organization by describing them as human capital, seeing in them problem-solving abilities that contribute to both short- and long-term firm performance, and rests on the assumption that formal training and developmental programmes are highly instrumental and necessary for improving the productive capacity of a population. Human capital theorists also argue that a skilled population is a productive population, in that investment in people's knowledge, skills and competencies through training and development increases the productivity and efficiency of workers by raising 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 and 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, emphasizing that investment in employee training is not merely an ordinary cost but a strategic driver of organizational competitiveness and sustainable performance.

This study is anchored on Human Capital Theory, complemented by the Resource-Based View and Stakeholder Theory. In 1984, Edward Freeman originally detailed Stakeholder Theory as a perspective on organizational management and business ethics that addresses morals and values in managing an organization. Stakeholder Theory is based on the premise that businesses operate in an ecosystem of various stakeholders, each of which contributes to the sustainability of the business and the ability of the company to create value for stakeholder groups. In explaining the relationship between human capital and financial performance, Stakeholder Theory is viewed from the fields of moral ethics and management: the ethical field argues that all stakeholders have the right to be treated fairly by the organization, and managers must manage the organization for the benefit of all stakeholders while the managerial field argues that the power of stakeholders to influence corporate management must be seen as a function of the level of stakeholder control over the resources needed by the organization. As Watts and Zimmerman (1986), cited in Ardiansari et al. (2018), noted that the more efficiently a company deploys its resources, both tangible and intangible, the higher its return, and this in turn increases the value stakeholders attach to the company.

Empirical Review

Siraprapa et al. (2023) studied the relationship between intellectual capital and firm performance, as moderated by sustainability disclosure. Data were extracted from 185 firms across three industries, namely agriculture and

food, technology, and services, listed on the Stock Exchange of Thailand from 2018 to 2020, and analysed using regression analysis. The study found that intellectual capital had a positive relationship with accounting and market performance, and that sustainability disclosure positively moderated the relationship between value-added intellectual capital (VAICTM) and market performance (Tobin's Q) at the 5 percent significance level. The researchers concluded that intellectual capital influenced firm performance and enhanced firm efficiency, particularly when firms paid attention to sustainability disclosure.

Joshua and Hussaini (2020) examined the impact of human capital investment on firm value among listed agribusiness firms in Nigeria for the period 2011 to 2020, with human capital cost proxied by directors' remuneration and staff salaries and wages cost, and firm value measured by Tobin's Q. Using an ex post facto research design and panel multiple regression, the study found that directors' remuneration had a negative and insignificant effect on agribusiness firm value, while staff salaries and wages cost had a negative and significant effect on the firm value of listed agribusiness firms in Nigeria. The study recommended that directors' remuneration be tied to profitability to attract commitment and performance, and that boards design additional incentive packages to motivate and enhance the workforce.

Eke et al. (2023) investigated human capital expenditure and the market value of listed insurance companies in Nigeria using a descriptive survey design. Out of the 21 listed insurance firms in Nigeria as at 31 December 2022, the study purposively selected two firms and analysed secondary data from their annual reports for 2015 through 2021, a 14-year period of annual observation. The researchers concluded that there is a substantial positive association between human capital expenditure and earnings per share, and that a strong correlation exists between human capital expenditure and the market value of insurance companies in Nigeria.

Sulaiman et al. (2021), in a study of six listed conglomerate companies in Nigeria from 2010 to 2018, explored the association between the value-added intellectual coefficient (VAIC) and market-based financial performance using static panel data regression. The study found that the value-added efficiency of capital employed (VACA), value-added efficiency of human capital (VAHU), and value-added efficiency of structural capital (STVA) each had a direct, significant influence on intellectual capital in the conglomerate sector. That study focused only on market-based financial performance, whereas the present study extends the scope to include accounting-based and competitive-based financial performance in the broader research programme from which this article is drawn.

Mourhij and Kallab (2022) assessed the impact of intellectual capital on dividend policy, focusing on cash and non-cash dividends among companies quoted on the Damascus Securities Exchange for the period 2010 to 2020. Using regression analysis, the study found an insignificant effect of intellectual capital and its components on the dividend payout ratio, and a similarly insignificant relationship between intellectual capital and the stock dividend ratio, with the exception of structural capital, which had a significant inverse effect on the stock dividend ratio. That study focused on dividend policy, whereas the present study emphasizes return on assets, Tobin's Q and price earnings ratio as measures of financial performance.

METHODOLOGY

The study examined the influence of human capital expenditure on Tobin's Q of listed industrial goods companies in Nigeria. The study area covered all industrial goods companies listed on the Nigerian Exchange Group (NGX), and the study was analytical in nature, employing panel regression to analyse the financial statements of the sampled companies. The study made use of secondary data gathered from the audited annual reports and financial statements of listed industrial goods companies in Nigeria, from which a purposive sample of thirteen (13) companies with complete data for the fifteen-year period 2010 to 2024 was drawn, yielding 185 firm-year observations on an unbalanced panel basis.

Tobin's Q, the dependent variable, was measured as the market value of equity plus the book value of debt, divided by total assets. Human capital expenditure, the independent variable, was measured for the purposes of this article

using the ratio of expenditure on training and development (ETDC) to total expenditure and the ratio of employees' wages and salaries cost (EWSC) to total expenditure. Consistent with the estimation approach adopted for the wider study from which this article is drawn, the model was estimated jointly with the two remaining human capital expenditure components (employees' health cost, EHC, and employees' contributory pension cost, ECPC) and with technology adoption (TAD) as a moderating variable, so as to obtain coefficient estimates for ETDC and EWSC that are net of the influence of the other human capital expenditure components; firm-specific fixed effects were included in the final estimated model to control for time-invariant firm-level heterogeneity, including asset tangibility and liquidity characteristics.

Model Specification

The cost model for the study is specified as:

$$TQ = f(HCE) \dots\dots\dots (1)$$

The function model is thus expressed as:

$$TQ_{it} = \beta_0 + \beta_1 ETDC_{it} + \beta_2 EWSC_{it} + \mu_i + \varepsilon_{it} \dots\dots\dots (2)$$

Where TQ represents Tobin's Q of listed industrial goods company i in year t ; β_0 is the constant term; ETDC represents training and development cost; EWSC represents wages and salaries cost.

Data Presentation, Analysis and Discussion of Findings

This section presents and analyses the panel data obtained for the 13 sampled listed industrial goods companies over the 2010 to 2024 period ($N = 185$ firm-year observations). The presentation follows the analytical sequence of descriptive statistics, correlation analysis, diagnostic (pre-estimation) tests, and panel regression analysis, before proceeding to discuss the findings in relation to the study's two specific objectives.

Descriptive Statistics

Table 1

Descriptive Statistics of Tobin's Q, Training and Development Cost, Wages and Salaries Cost, ($N = 185$)

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
TQ	2.4946	0.8188	48.6382	0.5035	6.5511	5.674	34.659
ETDC	0.0044	0.0042	0.0091	0.0013	0.0016	0.626	2.934
EWSC	0.0615	0.0591	0.1342	0.0110	0.0258	0.415	2.794

Note. TQ = Tobin's Q; ETDC = training and development cost; EWSC = wages and salaries cost. Author's computation (2026) using EViews 12.

Table 1 shows that Tobin's Q recorded a mean of 2.4946, well above unity, indicating that, on average, the market value of the sampled industrial goods companies exceeds the book value of their assets and that investors generally attach a growth or intangible-asset premium to firms in the sector. The wide gap between the mean (2.4946) and the median (0.8188), together with the very high maximum value of 48.6382, points to a right-skewed distribution driven by a few firms, most likely the dominant capitalisation-heavy cement producers, with

exceptionally high market valuation. Among the human capital expenditure proxies of interest, wages and salaries cost (EWSC) constitutes a substantially larger share of total expenditure (mean of 6.15 percent) than training and development cost (ETDC, mean of 0.44 percent), consistent with the typical cost structure of Nigerian industrial firms, in which basic remuneration dominates total human capital outlay while discretionary human-capital-building expenditure such as training remains comparatively small. All Three variables depart from normality, as reflected in the skewness and kurtosis statistics, particularly for TQ, which is accommodated in the study through the use of fixed-effects panel estimation with panel-corrected standard errors.

Correlation Analysis

Table 2

Pearson Correlation Matrix: Tobin's Q, Training and Development Cost, Wages and Salaries Cost

Variable	TQ	ETDC	EWSC	
TQ	1.000			
ETDC	-.280**	1.000		
EWSC	-.330**	.900**	1.000	

Note. ** Correlation is significant at the 0.01 level (2-tailed). Full correlation matrix, including the remaining human capital expenditure components and interaction terms, is contained in the Appendix. Author's computation (2026) using SPSS 26.

As shown in Table 2, both training and development cost ($r = -.280$, $p < .01$) and wages and salaries cost ($r = -.330$, $p < .01$) are negatively and significantly correlated with Tobin's Q at the bivariate level. Although this negative association appears counter-intuitive given the theoretical expectation that human capital investment enhances firm value, it is consistent with several empirical studies reviewed above, such as Nduka, Mark and Idayat (2024), and may reflect the fact that higher human-capital cost ratios often proxy larger, more labour-intensive but not necessarily more highly valued firms, or a lag between when human capital costs are incurred and when the resultant productivity and valuation gains materialise.

Diagnostic (Pre-Estimation) Tests

A series of diagnostic tests was conducted prior to regression estimation. The panel unit root test (Augmented Dickey-Fuller-Fisher and ADF-Choi Z-statistics) confirmed that TQ, ETDC, EWSC, along with the remaining study variables, are all stationary at level, $I(0)$, validating their use in the panel regression without differencing. The multicollinearity test, based on Tolerance and Variance Inflation Factor (VIF) statistics, confirmed severe multicollinearity among the raw human capital expenditure components, with ETDC recording a VIF of 28.035 and EWSC a VIF of 293.015, both far above the conventional cut-off of 10; this finding informed the decision to place greater interpretive weight on the overall model F-statistic than on individual component t-statistics. The Panel Cross-Section Heteroskedasticity Likelihood Ratio test rejected the null hypothesis of homoskedasticity for the TQ model ($LR = 1053.168$, $p = 0.000$), an especially large statistic consistent with the extreme skewness and kurtosis of TQ noted in Table 1; this was addressed through Panel-Corrected Standard Errors (PCSE) with cross-section weights in the final model. The Residual Cross-Sectional Dependence test found no evidence of cross-sectional dependence in the TQ model residuals (Breusch-Pagan LM = 76.534, $p = 0.5257$), while the Kao (1999) Residual Cointegration test rejected the null of no cointegration (ADF = -6.694, $p = 0.000$), confirming a stable long-run relationship among the study variables. Finally, the Hausman specification test strongly favoured the Fixed Effects estimator over the Random Effects estimator for the TQ model ($\chi^2 = 106.191$, $df = 9$, $p = 0.000$),

and the Fixed Effects Panel Least Squares model with PCSE was accordingly adopted as the basis for hypothesis testing.

Regression Results and Test of Hypotheses

Table 3

Fixed Effects Panel Regression with PCSE – Dependent Variable: Tobin's Q

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.5526	1.0081	2.532	0.0123
ETDC	-229.9546	152.0515	-1.512	0.1324
EWSC	16.9099	22.9528	0.737	0.4623

Note. $R^2 = 0.9857$; Adjusted $R^2 = 0.9839$; F-statistic = 536.731 ($p = 0.0000$); Durbin-Watson = 0.936; cross-section fixed effects (13 dummy variables) included. Author's computation (2026) using EViews 12.

The results in Table 3 show a very high Adjusted R^2 of 0.9839, indicating that firm fixed effects, human capital expenditure, technology adoption and their interactions jointly account for approximately 98 percent of the variation in Tobin's Q among the sampled companies. The overall model is highly statistically significant ($F = 536.731$, $p = 0.000$), leading to a rejection of the joint null hypothesis that human capital expenditure has no significant effect on Tobin's Q of listed industrial goods companies in Nigeria.

Training and development cost (ETDC) records a negative coefficient (-229.9546) that is not statistically significant at the 5 percent level ($t = -1.512$, $p = 0.1324$), while wages and salaries cost (EWSC) records a positive but likewise statistically insignificant coefficient (16.9099, $t = 0.737$, $p = 0.4623$), once firm-specific fixed effects are controlled for. Accordingly, the study fails to reject the null hypotheses that training and development cost, and salaries and wages cost, individually exert no statistically significant effect on Tobin's Q once firm-specific heterogeneity is accounted for, even though the overall model, taken jointly with the other human capital expenditure components and technology adoption, is highly significant.

DISCUSSION OF FINDINGS

The significant overall effect of human capital expenditure and technology adoption on Tobin's Q reported in this study is consistent with William et al. (2019), who found that human capital exerted a positive impact on the market value of Italian listed firms, and with Gimede (2013) and Siraprapa et al. (2023), both of whom established a link between intellectual or human capital efficiency and market-based performance measures, the latter specifically confirming that value-added intellectual capital positively influences Tobin's Q. However, the finding that neither ETDC nor EWSC attains individual statistical significance once firm fixed effects are introduced parallels the results of Yudhitya and Prihastiwi (2023), who found that human capital cost did not significantly affect stock prices among Indonesian infrastructure firms, and of Muslim et al. (2023), whose partial test results for Indonesian state-owned enterprises revealed a weak relationship between intellectual capital value and firm value. It also aligns with Joshua and Hussaini (2020), whose Nigerian agribusiness evidence similarly showed a significant, negative rather than positive, relationship between staff salaries and wages cost and Tobin's Q, reinforcing the observation that the direction and significance of the HCE-market value relationship is highly sensitive to model specification and the extent to which firm-specific heterogeneity is controlled for.

This divergence between the strong significance obtained in preliminary, non-fixed-effects estimation and the loss of significance in the final fixed-effects specification illustrates a broader methodological point: market

valuation measures such as Tobin's Q are highly sensitive to firm-specific, time-invariant characteristics, such as sector positioning and capitalisation size within the industrial goods sector, and studies that do not adequately control for such heterogeneity may be more prone to reporting spuriously significant HCE-market value relationships than studies, including the present one, that explicitly purge such heterogeneity from the estimates through firm fixed effects.

CONCLUSION AND RECOMMENDATIONS

This study examined the influence of human capital expenditure, with specific attention to training and development cost and wages and salaries cost, on Tobin's Q of listed industrial goods companies in Nigeria over the period 2010 to 2024. The results show that human capital expenditure, jointly with technology adoption and firm-specific effects, exerts a strong and statistically significant overall influence on Tobin's Q, confirming that human capital-related investment is systematically associated with how the market values listed industrial goods companies. However, neither training and development cost nor wages and salaries cost, taken individually, exerted a statistically distinguishable direct effect on Tobin's Q once firm-specific fixed effects were controlled for. The study therefore concludes that human capital expenditure influences market valuation principally as part of a firm-specific bundle of resources, governance structures and operating characteristics, rather than as an independently potent, freestanding expenditure line whose market effect can be isolated component by component. This conclusion lends support to a resource-based interpretation of the human capital-firm value relationship in the Nigerian industrial goods sector, in which the value created by human capital expenditure is inseparable from the firm-specific systems and routines within which it is deployed.

Based on the findings and conclusion of this study, the following recommendations are made:

- i. Boards and management of listed industrial goods companies in Nigeria should not expect a mechanical, linear improvement in Tobin's Q from increasing training and development or salaries and wages expenditure in isolation; rather, human capital investment decisions should be integrated with, and evaluated alongside, broader firm-specific value-creation systems, including corporate governance quality, operational efficiency and strategic positioning.
- ii. Investors and financial analysts should exercise caution in attributing market valuation premiums directly to specific human capital expenditure line items and should instead undertake more discriminating, firm-level due diligence that considers the interaction between human capital investment and firm-specific quality signals.
- iii. The Financial Reporting Council of Nigeria (FRCN) and the Nigerian Exchange Group Regulation Department should encourage clearer, more standardised disclosure of training and development cost as a genuinely distinct line item, separate from wages and salaries cost, to improve the ability of future researchers, analysts and regulators to isolate the marginal market-valuation contribution of each specific category of human capital expenditure.
- iv. Future research should extend the analysis beyond the industrial goods sector and explore alternative or complementary market-based valuation measures, as well as longer time horizons, to determine whether the firm-specific absorption of human capital expenditure effects observed in this study is sector-specific or a broader feature of the Nigerian listed equity market.

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