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HUMAN CAPITAL INVESTMENT AND FIRM VALUE OF QUOTED MANUFACTURING COMPANIES IN NIGERIA

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A B S T R A C T

This study aim to explore the relationship between human capital investment and stock prices of manufacturing firms in Nigeria, focusing on the period from 2010 to 2019. Human capital investment was taken as a summation of the expenditures on health, training, and remuneration, while stock prices serve as the dependent variable. The study employs panel data from 30 quoted manufacturing companies and utilizes an ex-post facto research design. The study adopts a panel regression model, specifying that stock price is a function of human capital investment. The model is mathematically represented and tested using the Augmented Dickey-Fuller Unit Root Test for stationarity and hypothesis testing for significance. The study relies on a sample of 30 manufacturing companies, selected using a convenience sample size determined by data availability. The Augmented Dickey-Fuller test established that both variables were stationary, making them apt for panel regression analysis. However, the results of hypothesis testing indicated that there is no statistically significant relationship between human capital investment and stock prices for the sampled companies. The calculated t-statistic (0.1313) and p-value (0.8956) failed to meet the criteria for rejecting the null hypothesis. The findings challenge traditional accounting practices that assume a direct, positive relationship between human capital investment and stock prices. This calls for a reevaluation of how such expenditures are reported and how their return on investment is calculated. Contrary to widely held beliefs and existing literature, the study reveals that human capital investments, specifically in health, training, and remuneration, do not significantly impact the stock prices of manufacturing firms in Nigeria for the period under investigation. This insight necessitates a rethinking of the paradigms surrounding human

K E Y W O R D S

Human Capital Investment, Stock Prices, Manufacturing Firms, Panel Regression, Nigeria, Accounting Implications.

capital investments and their influence on firm value, particularly in a developing economy like Nigeria.	

Introduction

In the contemporary business landscape, human capital has increasingly been recognized as a pivotal asset that can significantly influence a firm's competitive advantage and value (Kehoe & Wright, 2013). This trend has been particularly pronounced in emerging markets like Nigeria, where manufacturing firms form a critical part of the economy (Adeoye & Elegunde, 2012). Despite the apparent significance of human capital, there is a noticeable gap in empirical research exploring the nuanced relationship between human capital investment and firm value in Nigeria's manufacturing sector. According to human capital theory, investing in the workforce can yield substantial returns in productivity and profitability for a firm (Becker, 1993; Becker, 1964). The relevance of this theory in today's rapidly evolving business environment cannot be overemphasized, especially as firms seek to adapt to technological advancements and globalization (Rastogi, 2000). The Resource-Based View (RBV) also informs this study. According to RBV, the sustainable competitive advantage of a firm emanates from its capability to manage unique resources, such as human capital (Barney, 1991; Wernerfelt, 1984). This perspective underlines the strategic importance of investing in health, training, and remuneration as pathways to firm value (Crook, Todd, Combs, Woehr, & Ketchen, 2011).

Nigeria's manufacturing sector is an intriguing setting for this research due to its pivotal role in the national economy and its unique challenges like infrastructure deficit, policy instability, and limited access to finance (Oyelaran-Oyeyinka, 2006). These challenges make human capital investments even more critical as firms strive to enhance productivity and value (Udoh & Oyelaran-Oyeyinka, 2017). Yet, empirical studies investigating this nexus are scant, creating a scholarly and practical imperative for this research.

Most existing literature has examined human capital investment in the context of developed economies, thereby leaving a considerable gap regarding its impact on firm value in emerging markets like Nigeria (Dakhli & De Clercq, 2004; Kim & Ployhart, 2014). Moreover, extant research has often focused on broad metrics like firm performance without specifically considering stock prices as an indicator of firm value (Jiang, Lepak, Han, Hong, Kim, & Winkler, 2012).

Human capital is an indispensable asset for firms, particularly in the context of emerging economies like Nigeria, where manufacturing industries are significant drivers of economic growth (Kehoe & Wright, 2013; Adeoye & Elegunde, 2012). However, despite its importance, there is a paucity of empirical evidence investigating the specific relationship between human capital investment and firm value, particularly in the manufacturing sector of Nigeria.

Specific Concerns

Most existing research has been generalized to either developed economies or different sectors, thereby leaving a considerable knowledge gap for manufacturing firms in Nigeria (Dakhli & De Clercq, 2004; Kim & Ployhart, 2014). This lack of specificity makes it challenging for stakeholders to make data-driven decisions regarding human capital investments in the Nigerian context. Furthermore, while some studies have explored human capital's impact on firm performance, they have often not used stock prices as a precise metric for firm value (Jiang et al., 2012). Stock prices are critical indicators of a firm's perceived value and future prospects, thus providing an effective metric to evaluate the

return on human capital investments. Investments in human capital are multifaceted, comprising expenditures on health, training, and remuneration, among others. However, there is limited clarity on how each of these specific investments impacts firm value, especially in the Nigerian manufacturing sector. The uncertainty poses a problem for executives and policymakers who seek to allocate resources effectively to maximize firm value (Crook et al., 2011).

The absence of comprehensive, context-specific research on the influence of human capital investments on the firm value of manufacturing companies in Nigeria creates ambiguities in policy formulation and strategic decision-making. This uncertainty may lead to sub-optimal investment choices, thereby affecting the competitiveness and sustainability of firms in the long run (Rastogi, 2000; Udoh & Oyelaran-Oyeyinka, 2017). Given these identified problems, this study aims to answer the following question: "How do expenditures on health, training, and remuneration as subsumed in human capital investment impact the stock prices of quoted manufacturing firms in Nigeria between 2010 and 2019?" The overarching problem, therefore, lies in the inadequate empirical research that directly investigates the relationship between human capital investment—in terms of health, training, and remuneration—and the firm value, measured by stock prices, of manufacturing firms in Nigeria. Addressing this problem is not only theoretically significant but also practically imperative for guiding investments and policies that could enhance firm competitiveness and economic development in Nigeria.

Against this backdrop, the study aims to explore the impact of expenditures on health, training, and remuneration on the stock prices of quoted manufacturing firms in Nigeria, using panel data for 30 companies from 2010 to 2019.

Review of Related Literature

Theoretical Framework of the Study

The theoretical framework for this research is anchored on two principal theories: the Human Capital Theory and the Resource-Based View (RBV) of the firm. These theories collectively offer a robust lens through which to explore and understand the relationship between human capital investment—specifically expenditures on health, training, and remuneration—and firm value, measured by stock prices, in the Nigerian manufacturing sector.

Human Capital Theory

Human Capital Theory, initially expounded by Gary Becker in 1964, posits that investment in human resources leads to increased productivity and, consequently, higher economic returns for organizations (Becker, 1964; Becker, 1993). In the context of this study, three key components of human capital investments are examined: health, training, and remuneration. **Health**: Firms that invest in the health of their workforce are likely to benefit from reduced absenteeism, increased productivity, and a happier, more engaged workforce (Goetzel, Ozminkowski, Sederer, & Mark, 2002). **Training**: Investments in training and skill development lead to a more competent, flexible, and adaptable workforce. Training is often considered a crucial factor for enhancing productivity and ultimately, firm value (Knoke & Kalleberg, 1994). **Remuneration**: Competitive remuneration packages are instrumental in attracting and retaining high-quality employees, which in turn, adds to the firm's value (Gerhart & Milkovich, 1990). Human Capital Theory is particularly useful for this study as it directly ties into the investment components—health, training, and remuneration—that are presumed to affect

the firm value. It provides the foundation to hypothesize that greater investment in these areas will lead to an increase in stock prices.

Resource-Based View (RBV)

Initially developed by Wernerfelt in 1984 and expanded by Barney in 1991, the Resource-Based View posits that a firm's sustainable competitive advantage arises from its ability to assemble and manage a unique bundle of valuable resources (Wernerfelt, 1984; Barney, 1991). RBV categorizes resources into three main types: physical capital resources, human capital resources, and organizational capital resources. For this study, the focus is on human capital resources. The RBV is pertinent as it provides the theoretical justification for why certain companies with effective human capital management strategies outperform others in the stock market. According to RBV, effective management and investment in human capital can serve as a unique resource, giving the firm a competitive edge that is reflected in its stock prices (Crook et al., 2011). By combining Human Capital Theory and RBV, this study offers a more holistic approach to understanding the complex interplay between human capital investment and firm value in the Nigerian manufacturing sector. While Human Capital Theory explains the direct effects of human capital investments, RBV provides a broader perspective, encapsulating how these investments fit into the overall resource strategy of the firm to affect its market value.

The theoretical framework elucidated above serves as the conceptual backbone of this research, guiding the exploration and interpretation of how expenditures on health, training, and remuneration influence the stock prices of manufacturing firms in Nigeria. The confluence of these theories provides a multi-faceted lens to address the research question comprehensively.

Conceptual Clarification of the Study

Human capital investment refers to the commitment of resources by a firm towards the development and well-being of its workforce. The focus of this study is on three primary components: health, training, and remuneration (Becker, 1993; Crook et al., 2011). The human capital investment is particularly relevant to Nigerian manufacturing firms as they operate in an environment characterized by a range of challenges such as skill gaps, health issues, and high turnover rates (Udoh & Oyelaran-Oyeyinka, 2017; Oyelaran-Oyeyinka, 2020). Addressing these issues through targeted investments can potentially enhance firm competitiveness and value.

Firm value, in this study, is operationalized as the stock prices of quoted manufacturing firms. Stock prices are a market-based indicator that reflects the firm's overall value and potential for future growth (Jiang et al., 2012; Kim & Ployhart, 2014).

The stock prices of quoted manufacturing firms are particularly relevant indicators of firm value in Nigeria. They offer insights into investor perception and economic viability in a market that is often plagued by volatility and uncertainty (Adeoye & Elegunde, 2012; Egbide et al., 2020). These are manufacturing companies that are publicly traded on the Nigerian Stock Exchange (NSE). They are obligated to disclose their financials and operations to the public and are subject to various regulatory stipulations (Nwankwo, 2019). Focusing on quoted manufacturing firms allows for an examination of publicly available data, which lends greater credibility and verifiability to the study. Furthermore, these firms are essential players in the Nigerian economy, contributing significantly to GDP and employment (Udoh & Oyelaran-Oyeyinka, 2017; Fasanya & Onakoya, 2020).

Empirical Review

The empirical literature in the domain of human capital investment and firm value, particularly in the manufacturing sector, offers a multitude of perspectives and findings. Below is a review that focuses on recent studies, critically examining their methodologies, findings, and recommendations, especially as they pertain to the context of Nigerian manufacturing firms.

Okeke et al. (2021) employed a cross-sectional survey method focusing on selected manufacturing firms in Lagos, Nigeria. It was found that employee training significantly affects the productivity of firms. The study recommends that organizations should invest more in employee training programs. Ezeudu et al. (2020) utilized longitudinal panel data for 20 manufacturing firms from 2008-2018 in Nigeria. The study observed that investments in health and safety programs lead to long-term benefits in terms of firm value. It was recommended that **g**overnment agencies should enforce more stringent health and safety policies. Bello & Azeez (2019) employed a quasi-experimental design focusing on remuneration and its effect on employee retention in Nigerian manufacturing firms. The study found that competitive remuneration practices significantly affect employee retention. It was recommended that firms should adopt performance-based remuneration to retain top talents. Okeke et al. (2021) emphasized the significance of training, a notion corroborated by Ezeudu et al. (2020) who also highlighted the importance of health and safety training. Ezeudu et al. (2020) demonstrated that health investments significantly affect the long-term value of firms. This was echoed in the cross-sectional study by Okeke et al. (2021) albeit indirectly. Bello & Azeez (2019) found that competitive remuneration leads to employee retention, which is a crucial factor in maintaining firm value.

For instance, the study by Okeke et al. (2021) chose a cross-sectional survey method to examine selected manufacturing firms in Lagos, Nigeria. The methodology was effective for capturing a snapshot view of how training impacts productivity. On the other hand, Ezeudu et al. (2020) employed a longitudinal approach using panel data for 20 manufacturing firms across a decade. This approach was more complex and allowed them to observe long-term effects of health and safety programs on firm value. Such methodological diversities in these studies underscore the necessity to consider various research designs for a more comprehensive understanding (Okeke et al., 2021; Ezeudu et al., 2020).

When scrutinizing the findings of these studies, a pattern begins to emerge. Okeke et al. found that employee training significantly influences productivity, which has implicit implications for firm value. Ezeudu et al. went a step further to demonstrate that investments in health and safety programs are not just ethical imperatives but also confer long-term benefits in terms of increased firm value. The quasi-experimental study by Bello & Azeez (2019) highlighted how competitive remuneration practices are critical to employee retention, another factor that could indirectly contribute to maintaining or increasing firm value. Therefore, the findings, though distinct, converge to emphasize the importance of human capital investment in enhancing firm value (Okeke et al., 2021; Ezeudu et al., 2020; Bello & Azeez, 2019). Recommendations from these studies also provide actionable insights. Okeke et al. explicitly suggested that organizations need to invest more in employee training programs. Ezeudu et al. advocated for stronger governmental intervention to enforce health and safety standards, emphasizing the long-term benefits of such investments. Bello & Azeez recommended performance-based remuneration to foster talent retention. However, despite these contributions, the existing literature presents notable gaps. Firstly, there is a scarcity of studies that examine the direct impact of these human capital variables on stock prices, especially in the context of Nigerian manufacturing

firms. Secondly, the majority of studies concentrate on individual variables, often neglecting a comprehensive approach that could provide a fuller understanding of the relationships involved.

The complexity and diversity in methodologies seen in previous research provide an avenue for further exploration. For example, Ezeudu et al. (2020) focused on longitudinal data spanning a decade, which provided deep insights into how health and safety investments evolved over time to influence firm value. This research method offers the benefit of tracking long-term trends and establishes causality, which is essential for a robust understanding of the impact of human capital investments. Contrastingly, the cross-sectional approach adopted by Okeke et al. (2021) yielded insights into a particular point in time, offering value in its own right by capturing the immediate impact of training on productivity. Therefore, the coexistence of these different methodologies not only enriches the research landscape but also suggests that a multifaceted approach could be invaluable for this study.

Moving beyond the methodologies, one cannot overlook the subtleties embedded in the findings of these works. Okeke et al. (2021) focused on productivity as a measurable output but did not explicitly extend this to firm value, suggesting an area for further investigation. Moreover, Ezeudu et al. (2020) confirmed that long-term investments in health and safety protocols are critical, which implicitly affects stock prices by enhancing the firm's reputation and operational efficiency. Bello & Azeez (2019) offered another angle by focusing on remuneration, revealing that competitive pay scales significantly contribute to employee retention, which is likely to have a longer-term impact on stock prices due to the stability and efficiency that come with lower staff turnover. These subtleties in the findings indicate that while many researchers have touched upon various aspects of the topic, there remains a complexity that has yet to be fully unraveled. The recommendations that emanate from these studies are not just academically interesting but practically significant. Ezeudu et al. (2020) emphasized the role of governmental agencies in standardizing health and safety norms, which highlights an interaction between policy and firm practices. This brings to light the critical role of a macroeconomic environment in influencing microeconomic decisions in the corporate sector. On the other hand, Okeke et al. (2021) and Bello & Azeez (2019) offered more firm-centric recommendations focusing on training programs and performance-based remuneration systems, respectively.

The empirical literature review reveals that while significant work has been done on aspects of human capital investment like health, training, and remuneration, there are still uncharted areas deserving attention. These gaps in existing literature justify further research, especially those employing panel data to investigate how these variables collectively influence the stock prices of quoted manufacturing firms in Nigeria over an extended period (Okeke et al., 2021; Ezeudu et al., 2020; Bello & Azeez, 2019).

The gap observed in literature are; limited studies explicitly examine the direct impact of these human capital investments on stock prices in Nigerian manufacturing firms. The majority of studies focus on single variables like health or training, rather than a comprehensive approach that includes multiple elements like health, training, and remuneration. Studies rarely consider the time-varying nature of human capital investments, often limiting their findings to short-term implications. The existing empirical literature provides valuable insights into the impact of human capital investments such as health, training, and remuneration on firm value. However, there is a need for more holistic, long-term studies specifically in the context of quoted manufacturing firms in Nigeria to better understand this relationship.

Methodology

The research design employed in this study is ex-post facto, which allows for the investigation of cause-and-effect relationships among variables based on existing data without the need for manipulation or control (Kerlinger & Lee, 2000). This design is apt for the nature of this study as it seeks to establish the relationship between human capital investment and stock prices of quoted manufacturing companies in Nigeria based on historical data. The study used a sample size of 30 quoted manufacturing companies. The sampling technique applied was convenience sampling, informed by the availability of data. Convenience sampling, while less rigorous than random or stratified sampling techniques, offers the advantage of easier access to data and is often used when availability is a prime concern (Creswell & Creswell, 2017).

Model Specification

Mathematically, the model can be represented as follows:

$STP_{it} = \alpha + \beta 1 VAHC_{it} + \epsilon_{it}$

Where: STP_{it} is the stock price of the ith company at time t, α is the intercept, $\beta 1$ is the coefficient of the variable VAHC (Value Added by Human Capital), $VAHC_{it}$ is the investment in human capital for the ith company at time t, and ϵ_{it} is the error term for the ith company at time t. Based on existing literature and economic theory, the a priori expectation is that there is a positive relationship between human capital investment (VAHC) and stock price (STP). This expectation aligns with the work of scholars like Becker (1993), who posited that investment in human capital should enhance the overall value of the firm, and thus, its stock price.

The study employed panel regression analysis. Panel regression is particularly useful when you want to consider both cross-sectional and time-series data, providing more informative results, more variability, less collinearity among variables, and more degrees of freedom (Hsiao, 2003). This methodology allows the study to capture the nuanced impacts of human capital investment on stock prices over a period (2010-2019) and across different firms. It offers robustness in results and is capable of controlling for variables that are difficult to observe or measure, known as unobservables. Panel data provides the ability to model more complex and varied types of relationships that are not possible through simple cross-sectional or time-series data (Wooldridge, 2010).

Results and Discussions

Stationarity Test: Augmented Dickey-Fuller Unit Root Test

In time-series data analysis, it's essential to ensure that the data is stationary, as non-stationary data can produce spurious regression results, leading to misleading conclusions (Enders, 2014). The Augmented Dickey-Fuller (ADF) test is often employed to test for the presence of a unit root, which is an indicator of non-stationarity. A series is said to be stationary if its statistical properties do not change over time. The ADF test aims to reject the null hypothesis ($H0$) that a unit root is present in the time series sample, in favor of the alternative hypothesis ($H1$) that the time series is stationary or trend-stationary (Dickey & Fuller, 1979).

Table 1: Summary Result for Augmented Dickey-Fuller Unit Root Test

Variable Name	ADF Statistic	T-Statistic (5%)	Probability of T-Stat	Order of Integration
STP	-17.2726	-2.8710	0.0000	I(0)
VAHC	-17.2793	-2.8710	0.0000	I(0)

The ADF Statistic for both STP and VAHC are -17.2726 and -17.2793, respectively. The negative values are a good indicator as they suggest the potential for stationarity (Hamilton, 1994). The critical value at the 5% level of significance is -2.8710 for both variables. The ADF Statistic needs to be more negative than this critical value to reject the null hypothesis. The p-values for both STP and VAHC are 0.0000, which is less than the common alpha level of 0.05, indicating that we can reject the null hypothesis with a high degree of confidence (Gujarati, 2009). The I(0) indicates that the series are stationary at level, which means that they do not require differencing to make them stationary (Banerjee et al., 1993). Given that both the STP (stock price) and VAHC (Value Added by Human Capital) are stationary at level (I(0)), it implies that the panel regression analysis to be conducted will produce robust and reliable results. It also simplifies the data preparation process as no differencing or transformation is required to achieve stationarity.

Data Analysis

Table 2: Hypothesis Testing Result

Metrics	Value
Calculated T-Statistic	0.1313
Calculated Probability of T-Stat	0.8956
Number of Observations	300
Critical t-Statistic	1.973
Critical Probability of t-Stat	0.05

Calculated T-Statistic (0.1313): The t-statistic is a measure of the degree to which our groups differ standardized by the variability of our measurement. In this context, the t-statistic value of 0.1313 is substantially lower than the critical t-statistic value of 1.973. The p-value of 0.8956 is significantly higher than the critical probability level of 0.05, indicating that we fail to reject the null hypothesis. From a practical standpoint, this result suggests that, at least within the scope and timeframe of this study, investments made by manufacturing firms in Nigeria in human capital—like health, training, and remuneration—are not translating into increased stock prices. This could be a cause for concern for both managers and investors who traditionally assume that human capital investment will yield financial gains for the company. Theoretically, these results challenge existing literature that has posited a positive link between human capital investments and firm value (Becker, 1993; Schultz, 1961). The outcome of this study could encourage a re-evaluation of the theories that automatically correlate human capital investments with stock performance, suggesting that the relationship might be more complex than previously thought or influenced by other unexamined factors. The result indicate that within the context of manufacturing firms in Nigeria, human capital investments do not have a

statistically significant impact on stock prices. This finding holds both practical and theoretical implications that may warrant further investigation to unpack the nuances of the relationship between human capital investments and firm value in this specific context.

Conclusion and Recommendations

The primary objective of this study was to investigate the impact of human capital investment on the stock prices of manufacturing companies in Nigeria, focusing on the period between 2010 and 2019. The human capital investments were operationalized into three key components: expenditure on health, training, and remuneration. The analysis deployed panel regression modeling and applied a rigorous statistical framework, including the Augmented Dickey-Fuller Unit Root Test for stationarity and hypothesis testing to determine the relationship between the variables. The results revealed some unexpected findings. First, both stock prices (STP) and Value Added by Human Capital (VAHC) were found to be stationary at level, thereby implying that they were suitable for panel regression analysis without the need for transformations or differencing (Enders, 2014). Second, the empirical results failed to provide sufficient statistical evidence to reject the null hypothesis that posited no significant relationship between human capital investment and stock prices in manufacturing companies in Nigeria.

The failure to establish a significant relationship between human capital investment and stock prices has far-reaching practical ramifications for both policymakers and industry stakeholders. For business leaders, especially in the manufacturing sector, the results raise questions about the assumed benefits of investing in human capital for financial gains, at least in terms of stock prices. Investors and stakeholders may need to reconsider their perspectives on the efficacy of human capital investments as a value-generating mechanism in the manufacturing sector of Nigeria. Theoretically, these findings pose challenges to conventional models and theories that align human capital investments with increased firm value, such as the Human Capital Theory by Becker (1993) and the seminal works of Schultz (1961). The results invite scholars to delve deeper into the complexities of these relationships and consider other mediating or moderating variables that might impact this dynamic.

One of the most direct accounting implications is the need for a more nuanced cost-benefit analysis of human capital investments. Traditional accounting practices often categorize these expenditures as operational costs without adequate scrutiny of their return on investment (ROI) (Kaplan & Norton, 2004). Human capital, despite its intangibility, has often been touted as a valuable asset. The findings of this study could prompt a reevaluation of how human capital is considered in asset valuation models. Currently, many firms don't capitalize human capital; it often gets expensed immediately (Stewart, 1997). A greater emphasis may be needed in financial reporting to break down human capital investments. This transparency may provide investors with a more comprehensive understanding of where and how these investments are being allocated and their subsequent impact, or lack thereof, on stock prices (IFRS Foundation, 2018).

Recommendations

i. Firms should consider enhanced financial reporting that explicitly outlines human capital investments and their outcomes. Such transparency can give stakeholders a clearer picture of the effectiveness of such expenditures.

ii. Companies should adopt a more strategic approach towards human capital investments, focusing on targeted interventions that align with their long-term objectives, rather than generic expenditures on health, training, and remuneration.

iii. Accounting teams should incorporate the potential risks associated with human capital investments into their risk management frameworks, particularly since these investments may not directly lead to increases in stock prices.

iv. Given the implications on investor perceptions and decision-making, regulatory bodies should consider providing guidelines on how human capital investments are to be reported and disclosed, to ensure that stakeholders can make informed decisions.

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