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Corporate Governance and Intellectual Capital Performance: Evidence from Listed Manufacturing Companies in Nigeria

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Abstract

Lack of knowledge, experience, and governance supervision prevents many Nigerian manufacturing companies from measuring, managing, or reporting on intellectual capital in an acceptable manner. This discrepancy raises the possibility that the governance frameworks in existence are inadequate or inefficient at fostering the performance of intellectual capital. This study therefore examined how corporate governance affects intellectual capital performance of Nigerian listed manufacturing companies from 2014 to 2024. Board size (BS), board independence (BI), audit committee size (ACS), and board diligence (BD) were used to evaluate corporate governance, while human capital efficiency (HCE) was used to measure intellectual capital performance. Ex-post facto method was used as the study design. Data were Descriptive and correlation statistics, as well as diagnostic tests, were used to support the panel regression analysis of data taken from the annual reports of ten chosen listed manufacturing companies. The results showed that none of the corporate governance proxies (BS, BI, ACS, BD) have significant impact on HCE, according to regression results ($p = 0.464, 0.443, 0.690, 0.929 > 0.05$). It was concluded that corporate governance in Nigerian manufacturing firms is mostly symbolic and has minimal practical effect on the efficiency of human capital. In order to improve human capital efficiency, the study suggested that bolstering board independence, quality, and supervision are required, while urging manufacturing businesses to give organizational culture, technology adoption, and staff development top priority.

Keywords: Audit committee size, Board diligence, Board size, Board independence, Corporate governance, Human capital efficiency

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1. Introduction

The significance of intellectual capital, or knowledge-based assets that are essential to a company's long-term performance but are not shown on the statement of financial position. Intellectual capital (IC) performance includes relational capital efficiency, which involves connections with suppliers, partners, and consumers; structural capital efficiency, which involves systems, patents, and databases; and human capital efficiency, which involves the skills, knowledge, and competences of people (Pulic, 2019).

Corporate governance is the set of policies, procedures, and guidelines that guide and manage a business while balancing the interests of different stakeholders (Jame, 2019). Corporate governance is essential to Nigeria's economic development and to averting the failure of successful businesses (Assenga et al., 2018). In line with the organization's mission, the board is now required to oversee as well as offer strategic direction. The long-term viability of businesses depends on having a capable board, thus assessing the impact of board composition on business performance is crucial (Bairathi, 2022).

Knowing how corporate governance affects intellectual capital becomes crucial as businesses look to maximize shareholder value. Companies are guided and controlled by corporate governance rules, which are essential for promoting market competitiveness. However, various phases of a company's life cycle have varied perspectives on corporate governance. Board size, board independence, audit committee size, and board diligence are some of these governance measures that are thought to have an impact on strategic choices on IC investment and use (Nicholson & Kiel, 2019). Furthermore, many Nigerian manufacturing firms still lack the institutional structures and governance frameworks required to successfully leverage intellectual capital for enhanced performance and sustainability, despite the fact that intangible assets are increasingly important drivers of value creation (Okafor & Ujah, 2023).

The importance of intangible assets, particularly intellectual capital, in fostering innovation, competitiveness, and long-term profitability has come into sharper focus (Dzinkowski, 2018). However, a lack of knowledge, experience, and governance supervision prevents many Nigerian manufacturing companies from measuring, managing, or reporting on intellectual capital in an acceptable manner. This discrepancy raises the possibility that the governance frameworks in existence are inadequate or inefficient at fostering the performance of intellectual capital (Olayinka & Oluwatayo, 2019).

In addition, poor corporate governance is still common in Nigeria even after statutory changes like the Nigerian code of corporate governance were made to raise governance standards (SEC, 2022). Organizational performance is still impacted by problems including incompetent boards, a lack of transparency, insufficient supervision, and insider domination across all industries (Adegbite, 2019).

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Numerous studies conducted in Nigeria have looked at the connection between corporate governance and a range of business performance metrics, such as market value, operational efficiency, and financial results as shown in the studies of Shleifer & Vishny (2019); Aguilera & Jackson (2021); Adesanmi et al. (2021); Saleh, & Noraza (2017); Mohamed (2022); Nkamere (2025); Etim et al. (2024); Inyang et al. (2023); and Dagunduro et al. (2023). Furthermore, the governance connection is made more difficult by the varied human capital efficiency in Nigerian companies, which includes board size, board independence, audit committee size, and board diligence (Akpan & Amran, 2018). In order to close this research gap, this study offers empirical data that can guide practice and policy. As a result of this, it would be interesting to look at how corporate governance affects the performance of intellectual capital in publicly traded Nigerian manufacturing firms, focusing on the objectives listed below:

i. To examine the effect of board size on human capital efficiency of listed manufacturing companies in Nigeria.
ii. To establish the effect of board independence on human capital efficiency of listed manufacturing companies in Nigeria.
iii. To evaluate the effect of audit committee size on human capital efficiency of listed manufacturing companies in Nigeria.
iv. To investigate the effect of board diligence on human capital efficiency of listed manufacturing companies in Nigeria.

2. Literature Review

Conceptual Review

Intellectual Capital Performance

Intellectual capital, according to Carlos and Xavier (2020), is the collection of intangible assets that add value to the business. Employee creativity and inventive thinking, whether in the shape of new goods, services, or marketing ideas, are the source of the company's intellectual capital. The intangible value of a company is its intellectual capital, which includes its employees, knowledge, skills, bonuses, salary, goodwill, patents, organizational procedures, and internal information.

The idea of IC builds upon and elaborates on the company's core competencies as well as its operational and strategic expertise. Its primary goal is to give businesses advice on how to build their core competencies, which are reflected in intellectual capital, assess their contributions, control their expansion, and—above all—identify the most effective and efficient means of generating value while taking into account the unique characteristics of their core competencies and the outcomes that result from their interactions (Zhang et al., 2018).

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Intellectual capital performance makes reference to the human, structural, and relational capital resources that affect a company's total competitiveness. The knowledge and experience that are not only the product of an organization's endeavors but also serve as its most valuable assets constitute intellectual capital which serves as a company's greatest assets (Apiti, 2017). Human capital efficiency was employed to measure intellectual capital performance in this study.

Human Capital Efficiency

Rashid et al. (2020) posited that human capital encompasses of the gains from the expenses or expenditures made by business management to enhance the abilities or expertise of their staff members. The several expenses paid in educating or developing personnel within a firm are often combined and considered human capital. Training expenses, welfare expenses, salaries and wages, are among the varied expenditures that a business is anticipated to pay for personnel during various accounting periods (Rufus et al., 2022). In the explanation given by Yilmaz and Acar (2018), they opined that human capital involves the financial worth of an employee's expertise and abilities. Education, skills, training, health, intellect, and other qualities that employers admire, such loyalty and timeliness, are all included. Human capital quantifies the value added by an organization's human resources.

As posited by Ahangar (2020), an employee's degree of intellectual capacity is only apparent when they receive meaningful salaries and wages for the services they provide. If they receive insignificant or irrelevant compensation, employees with sufficient intelligence may not truly utilize their skills to increase the organization's productivity. Nonetheless, Nassar (2020) said that a business is not expected to utilize salaries and wages as a means of attaining additional increase in productivity when the optima level of employees' productivity is ascertained in terms of the size of the market.

Corporate Governance

Ahmed et al. (2023) viewed corporate governance as the set of policies, procedures, and frameworks that govern how businesses are run. It includes the interactions between the company's many stakeholders, including the board of directors, management, staff, clients, suppliers, and the general public. Ensuring accountability, transparency, equity, and integrity in a company's operations and decision-making process is the main objective of corporate governance (Aluoch, 2023).

Larcker and Tayan (2021) asserted that corporate governance involves the set of controls that a company uses to stop or deter managers who would act in their own best interests from taking actions that are harmful to the interests of stakeholders, including shareholders. It also to the procedures used to carry out the governance mission in business enterprises. The fundamental goal of corporate governance, which is to maximize shareholder wealth while upholding the reasonable expectations of other stakeholders, is made possible by these procedures (Okafor & Ujah, 2023).

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Jegede (2023) posited that corporate governance encompasses the elements that make up a company's operational framework, including the protocols, legal requirements, and conduct standards that ensure a company maintains an open line of communication with the community while pursuing pre-established organizational objectives. Jizi (2024) opined that the need to protect shareholders' interests began to emphasize the need of sound corporate governance, but over time, other important interests in commercial organizations were added to the list. The shift to stakeholder emphasis was prompted by the idea that these other interest groups are similarly impacted when commercial firms are poorly managed. Effective corporate governance also improves business success and lowers investor risk (Spanos, 2025).

Board Size

The number of people that make up a company's board of directors is referred to as its board size. The structure and makeup of the board are determined by this crucial component of corporate governance (Dada et al., 2023). The size and complexity of the company, industry standards, legal constraints, and best practices for corporate governance are only a few of the variables that can significantly affect board size (Nguyen et al., 2023).

It expected that larger organizations may have larger boards to meet the requirement for a variety of perspectives and experience, smaller enterprises often have smaller boards. There is frequently disagreement about the ideal board size, with some claiming that smaller boards are better for efficiency and decision-making agility and others that larger boards are better for wider representation and monitoring (Dagunduro et al., 2023). However, the appropriate board size for a company depends on various factors, including its strategic objectives, organizational culture, and government framework (Odhiambo, 2021).

The board of directors has important duties in monitoring top management and making sure the company meets its objectives. They have an impact on day-to-day operations and shareholder accountability (Oshatimi et al., 2022). A contentious issue is board size; stewardship theory supports smaller boards for efficient administration, while agency and resource dependency theories support larger boards for better oversight and experience (Heraniah, 2022).

Board Independence

Board independence is a crucial component of corporate governance since an organization's board of independent directors will make more objective and superior judgments and the company will experience less financial strain. Businesses with an independent board typically experience less financial strain (Amah, 2020). For unbiased decision-making, fewer agency issues, and improved oversight, board independence is essential (Al-said, 2021).

A crucial component of contemporary corporate governance systems is non-executive directors. According to Pfeffer (2018), having non-executive directors lowers corporate uncertainty and aids in capital raising. Firm performance is significantly impacted by an effective board with a higher percentage of non-executive directors (Zahra & Pearce 2019). A balance between

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executive and nonexecutive directors is ideal, according to the code of best practices for corporate governance, so that no one person or small group of people can control the board's decision-making (Baysinger, 2025).

Audit Committee Size

Audit committee is utilized as a tool to lessen agency issues that firms experience. The makeup and personality of the audit committee also have a big impact on how well an organization performs (Farar, 2023). According to corporate governance literature, an audit committee is expected to include independent members, some of whom must have financial knowledge, and it must have a beneficial effect on the firm's financial health (Mallin, 2020). The audit committee is responsible for ensuring that the company is transparent, which includes giving its stakeholders and shareholders accurate and trustworthy information (Kallamu & Saat, 25).

Dwekat (2022) posited that audit committee is responsible for preserving and protecting the equity and interests of shareholders both domestically and abroad. The audit committee is a vital component of corporate governance's financial section. A successful audit committee is one that is independent, sizable, and conscientious. An impartial and knowledgeable audit committee is closely linked to superior financial reporting and monitoring since they represent shareholders generally and minority shareholders specifically (Lois, 2021).

Board Diligence

Board diligence, which is shown by the number of meetings held annually, indicates how involved the board is in oversight and decision-making. A suitable frequency improves oversight and vigilance while increasing the firm's value. Frequent board meetings demonstrate a participatory board by offering a forum for proactive management and operational monitoring as well as strategic planning (Ma & Tian, 2019).

Kanu and Onoh (2021) contributed that the numbers of annual board meetings or the attendance rate of directors is sometimes used as stand-ins for board diligence. Active boards are in a better position to supervise executive choices and guarantee that long-term goals are met by human capital strategies. More frequent meeting can improve monitoring, ensure timely decision-making, and allow directors to respond quickly to challenges related to employees, training and operational efficiency (Akinyele, 2023).

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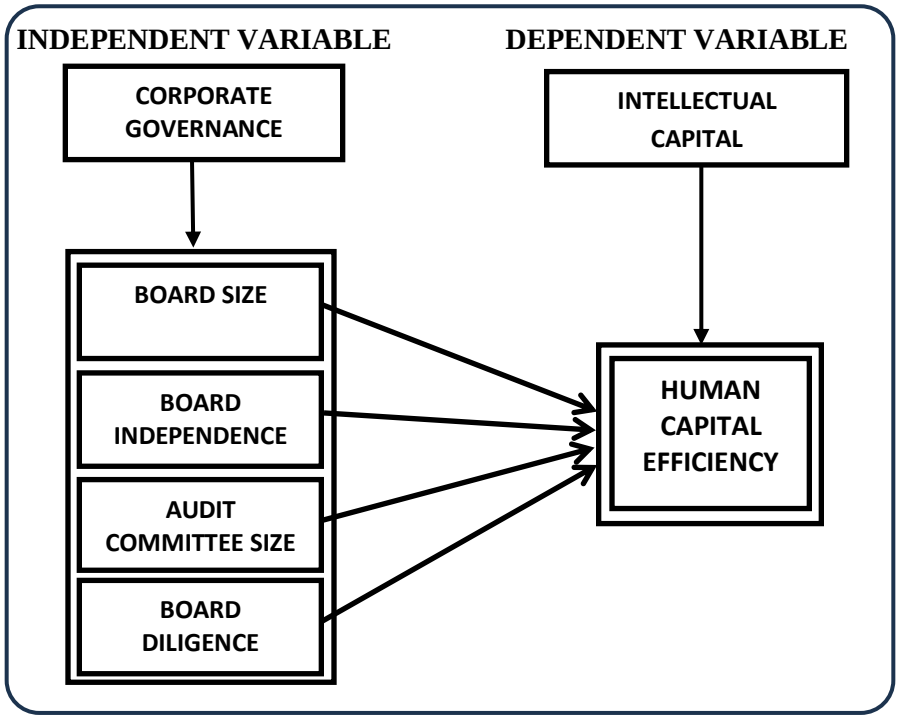

Figure 1. Conceptual Model
Source: Researchers' Design, 2026.

Underpinning Theory

Agency Theory

The theory of agency was proposed by Jensen and Meckling (1976). It helps to understand the relationship between principals, like shareholders, and agents, like managers. The main idea of this theory is that managers, acting as agents, might not always work in the best interest of shareholders because of personal goals or because they have more information (Jensen & Meckling, 1976). Corporate governance, and most likely agency theory, has seen some of the biggest advances in theory research. From a general standpoint, this makes governance seem like a contract or an arrangement between the investors and the board of directors. Maximizing their utility suggests that the board and management have decided to stick with choices that might best serve the board's interests but end up hurting investors (Kultys, 2016).

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Bayoumi and Yousef (2025) posited that agency theory offered a way to explain the differences between the owner and the employees to the extent that only ongoing oversight and a well-thought-out compensation plan could result in a good working relationship between the two sides. In a similar vein, Solanke (2019) proposed that a variety of private interests encourage people to use the information at their disposal to further their own objectives, which may differ from those of the organization. According to Kotlar and Sieger (2019), agency theory enhances internal control for the corporation and directs how to effectively govern it to accomplish performance in an organization. The agency theory serves as the foundation for this study because corporate governance was developed to address issues of managers engaging in self-interested expropriation of the company's resources.

Empirical Review

Sunmonu and Odeyale (2024) investigated how corporate governance affected Nigerian manufacturing companies' performance. Panel data gathered between 2017 and 2022 was used in the study. The method of convenience and simplicity sampling was used to choose seven manufacturing firms. Board independence and diversity have a positive, substantial impact on return on risk-weighted assets, according to the panel regression analysis, but board size has a positive, negligible impact.

Appah and Tebepah (2023) conducted a study on corporate governance practices and financial performance of publicly traded consumer goods manufacturing companies in Nigeria from 2011 to 2022. Investigating the impact of board size on return on equity and assessing the impact of board independence on return on equity of Nigerian listed consumer goods manufacturing companies were the particular goals. Ex post facto and correlational research designs were used in the study. Twenty-one (21) publicly traded consumer products manufacturing companies made up the study's population. Data analysis was done using secondary data. The findings showed that board independence has a significant-negative connection with return on equity, while board size has an insignificant connection with return on equity of the firms under study.

Izuchukwu et al. (2023) investigated the relationship between listed manufacturing enterprises' financial performance and their intellectual capital. The study employed an ex-post facto research design. Twenty (20) publicly traded consumer goods manufacturing companies made up the study's population. Data analysis was done using secondary data, and the time frame covered was from 2011 to 2019. The value-added intellectual coefficient (VAIC) has a non-significantly negative impact on the stated manufacturing businesses' asset turnover rate; on the other hand, VAIC has a non-significantly positive impact on the cited manufacturing firms' gross profit margin and return on assets.

Stella and Utitofonidara (2022) investigated the impact of listed non-finance companies in Nigeria on their corporate performance and intellectual capital. The time frame was 2012–2021. In order to investigate their impact on financial performance, this study used relational, structural, and human capital as intellectual proxies. The return on total assets was used to gauge the company's performance. An ex-post facto study approach was used, and the sample size of

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85 organizations was chosen using a purposive sampling technique and secondary data. The underlisted hypotheses were formulated in line with the study's objectives, as the prior studies reveals conflicting results:

Ho_1: Board size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

Ho_2: Board independence does not significantly affect human capital efficiency of listed manufacturing companies in Nigeria.

Ho_3: Audit committee size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

Ho_4: There is no significant effect of board diligence on human capital efficiency of listed manufacturing companies in Nigeria.

Gaps in Literature

Contextual Gap: The majority of current research on intellectual capital and corporate governance is focused on developed nations like the US, Europe, and some regions of Asia (Li & Zhao, 2021; Al-Musali & Ku Ismail, 2019). Research is comparatively limited and dispersed throughout Africa, especially in Nigeria (Ujunwa & Okoyeuzu, 2020; Olowolaju & Ogunleye, 2023). More specifically, Nigerian manufacturing firms, which are essential to GDP contribution, employment, and industrialization. This restricts our comprehension of how corporate governance impacts this sector's intangible resources, such as human capital.

Construct Gap: Prior studies often analyze overall intellectual capital efficiency (ICE) using the human capital efficiency (HCE) as a distinct outcome variable (Dzenopoljac et al., 2023). Yet, human capital is arguably the most critical component of intellectual capital in manufacturing, given the sector's dependence on workforce skills, innovation, and productivity. This neglect of HCE creates a void in literature that this study seeks to fill.

Variable Gap: Existing Nigerian studies have not comprehensively examined the combined effects of board size, board independence, audit committee size, and board diligence on human capital efficiency (HCE). Most works focus on one or two governance variables in isolation (Okereke & Nwankwo, 2022; Onyekwelu et al., 2022). This fragmented approach does not fully capture the holistic influence of governance structures on HCE. By integrating these four proxies, the present study provides a more comprehensive picture.

Methodological Gap: Several studies adopt cross-sectional data or focus on a single year, limiting their ability to capture dynamic relationships between governance structures and intellectual capital performance (Agyei-Mensah, 2019). Few studies employ panel data techniques across multiple years, which can better reveal causal and time-dependent effects. This study addresses this by using a multi-year panel dataset of Nigerian manufacturing companies
Practical/Policy Gap: Despite Nigeria's adoption of the 2018 Code of Corporate Governance, few studies have evaluated its practical effect on intellectual capital outcomes in listed

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manufacturing companies. Policymakers, regulators, and corporate leaders lack empirical evidence on whether governance reforms have translated into better management of human capital. This study provides relevant insights for corporate boards and regulators.

3. Methodology

Since the study does not influence the variables, the ex-post facto research strategy is used to ascertain the link between the variables. Also, the design highlights the relationship or influence between dependent and independent factors, ex-post facto is thought to be more pertinent (Creswell & Creswell, 2018). The sixty-four (64) listed manufacturing enterprises that were listed on the Nigeria Exchange Group (NGX) as of December 31, 2024, make up the study's population. Ten listed manufacturing companies, which encompasses of 3 healthcare firms, 3 industrial goods firms and 4 consumer goods companies were chosen for the study, using purposive sampling technique. The study relies exclusively on secondary data, which are obtained from the 10 selected annual report and financial statements from the listed manufacturing companies from 2014 to 2024, which covers 11 years period. Correlation, panel regression and descriptive analysis were employed. The econometric model designed to capture the association between the intellectual capital performance proxies of Nigerian listed manufacturing businesses and corporate governance proxies in accordance with the study's objectives is given as:

$$\mathbf{HCE = \mathit{f}(BS, BI, BD, ACS)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots i}$$

The model is specified as:

$$\mathbf{HCE = \beta_0 + \beta_1 BS + \beta_2 BI + \beta_3\ ACS + \beta_4\ BD + e\ldots\ldots\ldots\ldots\ldots\ldots ii}$$

Where:

Dependent Variable:
HCE = Human Capital Efficiency

Independent Variables:
BS = Board Size
BI = Board Independence
ACS = Audit Committee Size
BD = Board Diligence
β_0 = Intercept of the model
$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficients of the independent variables
e = Error term

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4. Results and Discussion

Presentation of Results

The results are presented and interpreted in this section in accordance with the study's objectives and hypotheses.

Table 1 Descriptive Statistics

	HCE	BS	BI	ACS	BD
Mean	30.68658	9.318182	0.321085	5.266055	3.309091
Median	12.37885	10.00000	0.300000	6.000000	3.000000
Maximum	671.3333	16.00000	0.777800	8.000000	10.00000
Minimum	0.000000	0.000000	0.000000	0.000000	0.000000
Std. Dev.	75.99375	3.455966	0.226424	1.670231	2.525995
Skewness	6.285294	-1.205536	0.387745	-2.127223	0.691812
Kurtosis	49.10976	5.112296	2.076225	7.688107	2.671277
Jarque-Bera	10468.93	47.09403	6.667579	182.0239	9.269661
Probability	0.000000	0.000000	0.035658	0.000000	0.009708
Sum	3375.523	1025.000	35.31930	574.0000	364.0000
Sum Sq. Dev.	629480.4	1301.864	5.588194	301.2844	695.4909
Observations	110	110	110	110	110

Source: Computation from E-Views, 2026.

The descriptive statistics, which give an overview of the central tendency, dispersion, and form of the data distribution for the variables being studied, are shown in Table 1. 30.68% is the average Human Capital Efficiency (HCE). The standard deviation of 75.99, however, shows a broad range between the minimum (-14.49) and maximum (796.27), indicating very high considerable variances across organizations. Some businesses make effective use of their people resources, while others fall far short. The average board size is nine members, which is in line with the number suggested by the Nigerian Code of Corporate Governance. The average board independence is 32%, indicating that many businesses do not adhere to best standards, which typically call for one-third to half of the board to be independent. Audit committee size averages around 5 members, close to statutory requirements.

Table 2 Correlation Matrix

Correlation Probability	**HCE**	**BS**	**BI**	**ACS**	**BD**
HCE	1.000000 -----				
BS	0.009170 0.9246	1.000000 -----			
BI	-0.125791 0.1925	0.388669 0.0000	1.000000 -----		
ACS	-0.041687 0.6669	0.714724 0.0000	0.403323 0.0000	1.000000 -----	
BD	-0.088433 0.3605	0.560603 0.0000	0.922240 0.0000	0.379111 0.0000	1.000000 -----

Source: Computation from E-Views, 2026.

The kind and degree of the linear correlations between the variables are shown in Table 2. It was observed that BI, ACS, and BD (r = -0.126, -0.042, -0.088) have weak negative associations with HCE, while BS has weak positive association with HCE (r = 0.009). This implies that human capital efficiency and corporate governance have negligible connections.

Table 3 Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	4.498451	4	0.3427

Source: Computation from E-Views, 2026.

Table 3 reveals the result of the Hausman test. The result shows a Chi-square statistic of 4.498451, as well as a p-value of 0.3427, which indicates that the null hypotheses are accepted. As a result, the most suitable and reliable estimator is the Random Effect model.

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Regression Results (Random Effect)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	37.56008	25.43022	1.476986	0.1427
BS	3.460848	4.711119	0.734613	0.4642
BI	-89.62582	116.3725	-0.770163	0.4429
ACS	-3.039089	7.587811	-0.400523	0.6896
BD	1.033664	11.52970	0.089652	0.9287
R-squared	0.645050	Mean dependent var		18.79331
Adjusted R-squared	0.608321	S.D. dependent var		70.95738
S.E. of regression	70.67073	Sum squared resid		519412.6
F-statistic	1.226548	Durbin-Watson stat		1.179213
Prob(F-statistic)	0.004146			

Source: Computation from E-Views, 2026.

The following is the model that the study previously specified:

HCE = 37.560 + 3.461BS – 89.626BI – 3.039ACS + 1.034BD

From the table above, it was observed that BS and BD positively affect HCE, while BI and ACS negatively affect HCE. This further implies that a unit increase in the firm's BS and BD would result to an increase of 3.461 and 1.034 in the firms' HCE, while a unit increase in BI and ACS would result to a fall in HCE of the firms by 89.626 and 3.039. In addition, all four of the explanatory factors (BS, BI, ACS and BD) are not significant as the p-values (0.464, 0.443, 0.690 and 0.929) falls below 0.05 significant threshold. The value of the Adj-R^2 (0.6083) implies that 60.83 of the changes in HCE can be explained by the explanatory factors. P-value of the F-statistic (0.004) implies that the overall model of the study is statistically fit at 0,05 threshold.

Test of Hypotheses

Ho_1: Board size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

Board size was observed to have a p-value of 0.464 which higher than 0.05 significant threshold. Therefore, the first null hypothesis was not rejected, thereby concurring that board size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

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Ho_2: Board independence does not significantly affect human capital efficiency of listed manufacturing companies in Nigeria.

Board independence was also observed to have a p-value of 0.443 which rise above 0.05 significant threshold. Therefore, the second null hypothesis was also not rejected, thereby concurring that board independence does not significantly affect human capital efficiency of listed manufacturing companies in Nigeria.

Ho_3: Audit committee size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

The regression results revealed the p-value of audit committee size to be approximately 0.690 which rise above 0.05 significant threshold. Therefore, the third null hypothesis was also not rejected, thereby concurring that audit committee size has no significant effect on human capital efficiency of listed manufacturing companies in Nigeria.

Ho_4: There is no significant effect of board diligence on human capital efficiency of listed manufacturing companies in Nigeria.

The regression results also revealed the p-value of board diligence to be approximately 0.929 which rise above 0.05 significant threshold. Therefore, the fourth null hypothesis was also not rejected, thereby concurring that there is no significant effect of board diligence on human capital efficiency of listed manufacturing companies in Nigeria.

Discussion of Findings

The study's conclusions offer fresh perspectives on the connection between listed manufacturing businesses' intellectual capital performance and corporate governance in Nigeria. By looking at Human Capital Efficiency (HCE) as a gauge for Intellectual Capital Performance and Board size, independence, audit committee size, and diligence as stand-ins for Corporate Governance. Despite having a positive board size coefficient, the link was not statistically significant. This suggests that larger boards do not always improve Nigerian manufacturing businesses' ability to employ human resources efficiently. This result aligns with the findings of Olowolaju and Ogunleye (2023), who noted that sluggish decision-making and coordination issues could outweigh the advantages of larger boards. It stands in contrast to research like that of Dzenopoljac et al. (2023), which discovered that in more advanced circumstances, larger boards can enhance intellectual capital management and strategic oversight.

Board independence had a statistically negligible negative relationship with HCE. This implies that the independent directors of Nigeria's listed manufacturing companies could not be fully autonomous or capable of influencing strategic decisions. The outcome backs up Ujunwa and Okoyeuzu's (2020) claim that Nigeria's lax enforcement of independence clauses compromises independent directors' oversight function. On the other hand, studies conducted in more robust institutional contexts (e.g., Li & Zhao, 2021) have demonstrated that independent directors improve the efficiency of intellectual capital by offering impartial supervision.

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Additionally, the study discovered a weak and negative correlation between audit committee size and HCE. This suggests that better governance outcomes are not always the consequence of adherence to statutory criteria for committee composition. According to Agyei-Mensah (2019), committee diligence and experience are more important than size. According to this research, audit committees in Nigerian manufacturing companies might not have the technical know-how to affect the efficiency of intangible assets.

The lack of board diligence implies that more non-independent directors or more frequent board meetings do not equate to improved human capital management. This result is consistent with Onyekwelu et al. (2022), who warned that performance is frequently not significantly impacted by meeting frequency in the absence of meaningful participation.

5. Conclusion and Recommendations

Conclusion

The results showed that the impact of board size on the effectiveness of human capital in Nigerian listed manufacturing companies is negligible. According to the study's findings, board size might not be strategically in line with the benefits of immediate intellectual capital performance goals. The results also showed that the effectiveness of human capital is not significantly impacted by board independence. According to the study's findings, board independence alone won't be enough to boost the effectiveness of human capital in Nigerian manufacturing companies that are listed; It was also found that the effectiveness of human capital in Nigerian listed manufacturing companies is not significantly impacted by the size of the audit committee. Accordingly, the study comes to the conclusion that the size of the audit committee is insufficient to encourage increases in the human capital efficiency of Nigerian listed manufacturing companies; The results showed that the effectiveness of human capital in Nigerian listed manufacturing companies is not significantly impacted by board diligence. Therefore, the study comes to the conclusion that board diligence alone is insufficient to increase the human capital efficiency of Nigerian listed manufacturing companies.

Recommendations

Regulators like FRCN, SEC, NGX should guarantee the independence, competency, and quality of directors in addition to dictating the size of the board. It should be mandatory for board members to undergo regular training and evaluation. Regulators must to go beyond only establishing formal specifications and instead keep an eye on the independence and real performance of boards and committees. In order to improve board members' comprehension of governance and human capital matters, regulators ought to require them to participate in ongoing professional development programs.

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Management of manufacturing companies should implement intentional training, innovation, and knowledge management policies to supplement governance. Regardless of the composition of the board, this will directly enhance HCE. Boards and audit committees should prioritize expertise, diversity, and engagement over mere compliance with numerical requirements.

Boosting of audit committee effectiveness: In addition to having the necessary number of members, audit committees should also include people with pertinent experience in human resource management, accounting, and auditing.

Increased board diligence: Instead of being routine compliance exercises, board and committee meetings should concentrate on strategic supervision, including human capital challenges.

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