

## Effect of Intellectual Capital on Financial Performance of Listed Consumer and Industrial Goods Companies in Nigeria

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### Abstract

The study examined the effect of intellectual capital on the financial performance of listed consumer and industrial goods firms in Nigeria from 2013 to 2022. The population of the study consisted of thirty-two (32) listed consumer and industrial goods firms on the Nigeria Exchange Group, from which a sample twenty-six (26) firms was chosen using the purposive sampling technique. The study used secondary data that was taken from the companies' financial statements, and it employed a longitudinal panel research design. The results showed that capital employed by the listed consumer and industrial goods firms in Nigeria has a positive and significant effect on the financial performance. However, the study found that human capital has no significant effect on the financial performance of listed consumer and industrial goods firms, while structural capital has a negative but significant effect on the financial performance. The study recommends that listed consumer and industrial goods firms should strategically invest to optimize capital employed as this will improve the financial performance.

**Keywords:** Intellectual capital, Financial Performance, Return on Asset, Consumer and Industrial Goods Sectors, Nigerian Exchange Group.

### 1.0 Introduction

In the contemporary global economy, intellectual capital has become a quite essential driver for businesses for competitiveness and sustainability (Chude et al., 2020). The complex interaction between intangible assets, knowledge, and skills within an organization defines its intellectual capital, exerting a pivotal influence on strategic capabilities and overall performance. It is safe to assert that the knowledge of an intrinsic relationship between intellectual capital and financial performance becomes indispensable for informed decision-making and strategic planning as organizations navigate a fast-evolving global environment. Businesses within the industrial and consumer goods sectors are contending with the challenges of an evolving environment with varying policies and realities. It has then become imperative for constant adaptation and innovation in the global marketplace calls attention to the significance of intellectual capital in gaining and maintaining a competitive edge (Awotomilusi et al., 2022). The dynamic nature of tangible and intangible assets heightens the need for strategic decision-making and comprehensive planning, emphasizing the strategic role of intellectual capital in achieving long-term success (Chude et al., 2020). Nigeria, as a developing economy, is undergoing a reflective alteration, with a particular focus on its industrial and consumer goods sectors. The organizations within the sector of interest are not only vital component of the national economy but also are posed to foster economic development, generate employment, and contribute to overall societal well-being. The ongoing changes in these sectors reflect the broader economic shifts occurring in the country.

The connection between intellectual capital and the financial performance of companies in Nigeria's industrial and consumer goods sectors hold particular relevance. In the dynamic Nigeria business framework, where companies are exerting pressure to establish themselves both domestically and internationally, the effective recognition and deployment of intellectual capital become critical. As businesses navigate the complexities of the global marketplace, leveraging intellectual capital becomes a key strategy for achieving sustained growth and success. This recognition supports the assertion of Awotomilusi et al. (2022), emphasizing the importance of understanding the intricate relationship between intellectual capital and business performance in Nigeria. Business environment requires more efforts geared towards not just competing but striving to innovate and adapt to remain competitive on both local and global fronts. The ability to harness and leverage intellectual capital becomes a distinctive factor in success and business sustainability. The transformation of Nigeria's industrial and consumer goods sectors represents not only a response to global economic trends but also an opportunity for companies to strategically position themselves for sustainable growth in the evolving economic landscape.

Despite the known relevance of intellectual capital, there is a notable absence of empirical studies to analyze its effect on the financial performance of listed industrial and consumer goods companies in Nigeria. majority of existing studies such as Umar and Dandago (2023) and Ahmed et al (2022) were conducted on non-financial firms, similarly Ezejiofor and Ezekwesili (2022) and Dawodu et al (2018) studied deposit money banks, while Awotomilisi et al (2022) and Nkechi and Onyekachi (2022) studies were conducted on consumer goods and manufacturing firms respectively. This gap in the existing literature informs the need for empirical study to fill the knowledge void and provide an in-depth perspective of the specific dynamics of intellectual capital within the unique context of the Nigeria industrial and consumer goods companies.

By bridging this gap, the study aims to provide a foundation for evidence-based decision-making, enabling stakeholders to navigate the complexities of the Nigeria business environment with a better understanding of how intellectual capital influences financial outcomes of listed industrial and consumer goods companies in Nigeria. This study's main goal is to examine the connection between listed Nigerian consumer and industrial goods businesses' financial success and their intellectual capital.

## 2.0 Literature Review and Hypotheses Development

### *Human Capital and Financial Performance*

Gunawan et al. (2023) investigated the effect of intellectual capital on the financial performance of manufacturing companies in the consumer goods sector listed on the Indonesia Stock Exchange from 2018 to 2021, before and during the Covid-19 period. Employing purposive sampling, the study used multiple linear regression analysis, revealing that human capital efficiency had a significant positive effect on financial performance, while structural capital efficiency showed no effect. Capital employed efficiency had a significant negative effect before and a significant positive effect during the Covid-19 period.

Ezejiofor and Ezekwesili (2022) examined the effect of human capital investment on performance of Nigerian banks from 2011 to 2020 relying on an ex-post facto research design, the population for this study comprised of all deposit money banks listed on the Nigeria stock exchange. Judgmental sampling technique was adopted to select a sample of nine (9) deposit money banks listed on Nigeria Stock Exchange. Secondary data was collected from the annual reports and accounts of the listed deposit money banks, and analyzed using Ordinary least square (OLS) with the help of e-view 9.0 statistical

software. The result of the study shows that human resource investment has no significant effect on both return on equity and earnings of deposit money banks.

Nkechi, and Onyekachi (2022) explored the impact of intellectual capital on the corporate performance of selected consumer goods manufacturing companies in Nigeria from 2010 to 2019. Employing an ex-post facto research design, the study formulated two research questions and hypotheses. The population included all manufacturing firms quoted on the Nigerian Stock Exchange as of June 30, 2020, with a sample of sixteen consumer goods manufacturing companies. Secondary data from annual reports and the Nigerian Exchange Group website were used, and fixed-effect panel least square regression analysis validated the hypotheses. Findings revealed a significant positive effect of human capital on returns on assets and a significant effect of structural capital on returns on assets.

Enekwe et al (2022) examined the effect of intellectual capital on financial performance of listed consumer goods companies in Nigeria. Ex-post facto research design was adopted and secondary data drawn from the annual report and accounts of four (4) listed consumer goods firms covering a period of ten (10) years from 2010 to 2019 both years inclusive. The E-views version 9.0 statistical software was used to run the panel multiple regression. The result of the regression analysis revealed that human capital efficiency (HCE) has positive and significant effect on return on assets (ROA).

Obiukwu and Okoye (2021) examined the effect of human capital investment on financial performance of deposit money banks listed on Nigerian Exchange Group (NGX) covering a ten-year period spanning from 2007-2017. The study employed an ex-post facto research design, with a population of 14 deposit money banks listed out of which a sample of nine (9) deposit money banks were selected using purposive sampling technique and secondary data were obtained annual reports and accounts of the sampled deposit money banks. Ordinary least square (OLS) method of regression was utilized in testing the hypotheses with the aid of E-Views 9.0. The Result of the study revealed that human capital investment had a statistically significant effect on earnings per share of selected listed deposit money banks in Nigeria and a significant positive effect on return on capital employed (ROCE) of selected listed DMBs in Nigeria.

Edem et al, (2019) examined the effect of human capital efficiency on profitability of listed oil and gas firms in Nigeria covering a period of thirteen years from 2006 to 2018 adopting ex post facto research design. The population of the study was made up of 12 oil and gas firm out of which 9 firms were selected purposively. Secondary data was sourced from annual reports of the sampled firms and analyzed using regression. The findings revealed that human capital efficiency had significant positive effect on ROA. Based on the above outcomes the study hypothesizes that:

*Ho1: Human Capital has no significant effect on the financial performance of listed industrial and consumer goods companies in Nigeria.*

### ***Capital Employed and Financial Performance***

Sonali and Kaushala (2023) conducted a quantitative research study examining the quantification of Intellectual Capital and its impact on the performance of Consumer Staples firms listed on the Colombo Stock Exchange in Sri Lanka from 2012 to 2020. Using EViews for panel data analysis, the study identified Capital Employed and Human Capital as significantly positively impacting firm performance in the

consumer staples sector. Additionally, leverage was found to impact firm performance. However, Structural Capital did not exhibit a significant impact

Umar and Dandago (2023) investigated the link between intellectual capital and financial performance in 58 listed non-financial service firms in Nigeria from 2012 to 2022. Utilizing correlational research design and extracting data from annual reports, the study employed the modified Value-added intellectual coefficient (MVAIC) method to measure intellectual performance. Return on equity (ROE) and Tobin's Q were used for financial performance, and multiple regression analysis assessed the impact of intellectual capital. Findings revealed varied relationships between intellectual capital and financial performance indicators, suggesting that intellectual capital influences the financial performance of listed non-financial service firms.

Ahmed et al. (2022) investigated the impact of intellectual capital, its components, and ownership structure on the performance of non-financial firms in Malaysia. Using balanced panel data from 2016 to 2020, the study applied the modified value-added intellectual coefficient model to examine intellectual capital efficiency. Findings indicated a positive and significant relationship between capital employed efficiency, intellectual capital efficiency, human capital efficiency, structural capital efficiency, relational capital efficiency, and firm performance. Physical and structural capital emerged as crucial elements for profitability, and government and foreign ownership positively influenced firm performance.

Aluwong (2022) investigates the effect of intellectual capital on financial performance of listed non-finance firms in Nigeria covering a period of ten (10) years from 2011 to 2020. The study adopted longitudinal design with a sample size of thirty firm's selected using purposive sampling technique. Financial performance proxied by return on asset was the dependent variable, the independent variables adopted for the study were structural capital efficiency, capital employed efficiency, human capital efficiency and value-added intellectual capital coefficient, while leverage was employed as the control variable. Secondary data was collected from the financial statements of the sampled firm's analyzed using regression. The empirical result revealed that capital employed efficiency significantly improve firm performance.

Haruna (2021) investigated the effect of intellectual capital on the performance of multinational companies in Nigeria using a sample of twenty-four (24) multinationals companies for the period of ten years from 2010 to 2019. Price earnings ratio was used as a proxy for financial performance in the study; while intellectual capital the independent variable of the study was proxied by capital employed efficiency, human capital efficiency, and structural capital efficiency. The study used Revenue Growth, Firm Size, and Firm Age as control variables. The study used longitudinal research design, secondary data source and panel regression technique of data analysis was employed. The result indicated that capital employed efficiency significantly and positively impacted on the performance of multinational companies operating in Nigeria.

Nnubia et al. (2019) researched on the effect of intellectual capital on financial performance of non-financial firms in Nigeria from 2007-2016. The 113 listed non-financial firms on the Nigerian Stock Exchange constituted the population of the study. A sample of twenty-one (21) firms was selected using purposive sampling technique. The study adopted ex post facto research design. Secondary data collected from financial statements of the sampled companies was analyzed using Ordinary Least Square regression technique. The findings revealed that capital employed efficiency, has positive significant

effect on the financial performance of listed non-financial firms in Nigeria. Thus this study hypothesizes that:

*Ho2: Capital employed has no significant effect on the financial performance of listed industrial and consumer goods companies in Nigeria.*

### ***Structural Capital and Financial Performance***

Awotomilusi et al. (2022) explored the impact of intellectual capital on the performance of Nigerian consumer goods companies. Through purposive sampling, the study focused on a sample size of 17 companies within the sector. Financial statements spanning nine years, from 2013 to 2021, were scrutinized to assess the relationship between intellectual capital components and financial performance. The data analysis employed multiple regression techniques. The findings revealed a significant positive effect of structural capital, human capital and relational capital, on financial performance on consumer goods companies.

Ivanovic et al. (2021) assessed the impact of the key elements of intellectual capital on the financial performance of agricultural enterprises operating in emerging markets from 2011 to 2018 using a sample of 47 agricultural enterprises. The study used secondary data and adopted Dynamic panel regression model estimation technique. The research findings revealed that Structural Capital Efficiency (SCE) has a negative and insignificant impact on the financial performance of the sampled agricultural enterprises, while Capital Employed Efficiency (CEE) and Human Capital Efficiency (HCE) has a significant impact on financial performance. Asif. (2020) analyzed the association between intellectual capital investment and firm performance of the Malaysian energy sector. A sample of 372 firms in the energy sector was considered in the study from 2009-2018. Secondary data and multiple regression method of data analysis were employed in the study. The regression result revealed that structural capital has no significant effect on the performance of firms in the energy sector. In addition, firm performance is negatively affected by human capital efficiency and capital employed efficiency.

Abubakar et al. (2019) explored the effect of structural capital (proxy with intellectual property rights) on the performance of listed consumer goods companies (CGCs) in Nigeria. The population of the study comprised of twenty-two (22) Consumer goods companies listed on the Nigerian Stock Exchange and a sample of fourteen (14) were selected using purposive sampling technique. Ex-post facto research design and secondary data was used in the study. The result revealed that intellectual property rights have positive and significant effect on performance of listed consumer goods firms in Nigeria.

Dawodu et al (2018) examined the effect Human Capital Development on Organizational Performance in the Food, Beverage and Tobacco Industry in Nigeria, employing an ex-post facto research design from 2008 to 2017, utilizing data from annual reports and accounts. The descriptive and inferential methods of analysis, supported by SPSS statistical tool (version 26.0), were applied. The findings revealed a positive and significant impact of the intellectual capital construct, encompassing structural capital efficiency and capital employed efficiency, on the financial performance of the chosen Food, Beverage and Tobacco companies. Based on the above outcomes this study hypothesizes that:

*Ho3: Structural Capital has no significant effect on the financial performance of listed industrial and consumer goods companies in Nigeria.*

### *Theoretical Review*

The Knowledge-Based theory, introduced by Robert M. Grant in 1996, is grounded in the idea that knowledge is a critical resource for achieving a competitive advantage. Grant argues that firms that effectively identify, acquire, and leverage knowledge resources are more likely to sustain a competitive edge in the market. Within the realm of intellectual capital, Knowledge-Based View places emphasis on the strategic management of knowledge assets. This includes the identification, development, and utilization of intellectual resources within an organization. For the study at hand, Knowledge-Based View provides a theoretical lens with which to explore how companies strategically manage their intellectual capital to enhance financial performance.

Human capital directly impacts productivity and innovation, which in turn affect financial performance. Skilled and knowledgeable employees can optimize processes, create value, and drive growth, leading to better asset utilization and higher ROA. Similarly, Structural capital supports human capital by providing tools and frameworks that enhance productivity. A Well-developed structural capital enables smoother operations, reduces errors, and improves decision-making, thereby contributing to better financial outcomes and increased ROA. Finally, capital employed ensures a steady flow of revenue through customer loyalty, favorable terms with suppliers, and beneficial alliances. These relationships can lead to cost savings, enhanced market access, and ultimately higher ROA. Knowledge base theory explains that the interplay between human capital, structural capital, and relational capital significantly influences an organization's financial performance. By investing in and managing these knowledge resources effectively, organizations can enhance their asset utilization, leading to higher profitability and sustainable growth.

### **3.0 Methodology**

The study adopted the longitudinal panel research design. The population of this study is made up of thirty-two (32) listed consumer and industrial goods firm on the floor of the Nigerian Exchange Group for the period 2013 to 2022. The sample size of the study was twenty-six (26) consumer and industrial goods firm determined through the purposive sampling technique after applying a three-point filter which include (1) All the sampled companies must be listed on or before 1<sup>st</sup> January 2012 (2) the companies must have complete financial statement for the study period and (3) the company must not suffer from technical suspension within the study period. The study relied on secondary data extracted from the annual report and account of the sample firms for the period under review. The study employed the descriptive statistics, correlation analysis and the multiple regression method of data analysis.

#### *Model Specification*

The study adopted with modification the model of Umar and Dandago (2023), the modified model for this study is presented below:

$$ROA_{it} = \alpha_0 + \beta_1 SCE_{it} + \beta_2 HCE_{it} + \beta_3 CEE_{it} + \beta_4 FSIZE_{it} + \beta_5 FAGE_{it} + e_{it}$$

Where;

ROA<sub>it</sub>= Return on Asset for firm i in year t,

SCE= Structural capital efficiency for firm i in year t

HCE= Human capital efficiency for firm i in year t,

CEE= Capital employed efficiency for firm i in year t,

FSIZE<sub>it</sub>=Firm Size for firm i in year t,

FAGE<sub>it</sub>=Firm Age for firm i in year t,

$\alpha_{0it}$  = constant

$B_1-\beta_5$  = Coefficient of firm  $i$  in year  $t$

$e_{it}$  = error term.

The information on how the study variables were measured is presented in table 1 below;

**Table 1: Variable Measurement**

S/N	Dependent Variable	Measurement	Source
1	Return on Asset (ROA)	Profit after tax divided total asset	Gunawan, et al, (2023)
2	Structural capital efficiency (SCE)	Structural capital/ value added	Ahmed et al, (2022)
3	Human capital efficiency (HCE)	Value added/human capital	Ahmed et al, (2022)
4	Capital employed efficiency (CEE)	Value added/capital employed	Nkechi et al, (2022)
5	Firm Size (FSIZE)	Natural Log of total asset	Ahmed et al, (2022)
6	Firm Age (FAGE)	Number of years from date listed to current year	Ahmed et al, (2022)

**Source:** Researchers compilation from previous literature.

#### 4.0 Results and Discussion

This section provides the result of descriptive statistics, diagnostic test, model selection test, and regression result.

##### *Descriptive Statistics*

The study used descriptive statistics to obtain a summary statistic of the data for the research. It described the data in terms of its central tendency (mean) and dispersion (standard deviation) as well as the minimum and maximum values of the variables to facilitate appreciation of the nature of the data used for the study. Hence, the study presents both the dependent, independent, and control variables in terms of their mean, standard deviation, minimum and maximum values as shown in table 2

**Table 2: Descriptive statistics for roa huce sce cee fsize fage**

Variable	Obs.	Mean	Std. Dev	Min	Max
roa	260	6.400	17.416	-179.920	108.900
hce	260	4.236	5.565	-2.780	73.380
sce	260	17.957	299.647	-4.831	7.480
cee	260	0.3109	0.405	-1.030	5.850
fsize	260	7.266	0.988	5.239	9.310
fage	260	31.500	13.498	3	57

**Source:** STATA 16 output Results based on study data

Table 2 shows that the average return on asset (ROA) of listed consumer and industrial goods firms in Nigeria was 6.400 with a standard deviation (SD) of 17.416. This is an indication that the ROA of the sampled firms deviate from both sides of the mean by 17.416, which means that the data is widely dispersed from its mean. The ROA also has a minimum and maximum value of -179.920 and 108.900 respectively.

Table 2 also shows that the average Human capital efficiency (HCE) of the listed consumer and industrial goods firms in Nigeria was 4.236 with a standard deviation (SD) of 5.565, this shows that HCE of the sampled firms deviate from both sides of the mean by 5.565, which means that the data is widely dispersed from its mean. The minimum and maximum values of HCE are -2.780 and 73.380 respectively.

In the same vein, the mean structural capital efficiency (SCE) of the sampled firms for the study period was 17.957 with an SD of 299.647. This means that the SCE deviate from both sides of the average by 299.6466 meaning that the data is widely dispersed from the mean. The SCE also has a minimum of -0.483 and a maximum of 7.480 respectively. Furthermore, the mean value of capital employed efficiency of the sampled firms for the study period was 0.311 with an SD of 0.4045. This means that the CEE deviate from both sides of the average by 0.405 meaning that the data is widely dispersed from the mean. The CEE also has a minimum value of -1.030 and a maximum of 5.850 respectively.

In addition, Table 2 shows that the firm size (FIZE) of the sampled firms has an average of 7.266 with an SD of 0.988. This shows that FIZE deviate from both sides of the mean by 0.988, meaning that the data is widely dispersed from the mean. The FIZE also has a minimum and maximum value of 5.240 and 9.310 respectively. Finally, Table 2 shows that the firm age (FAGE) of the sampled firms has an average of 31.500 with an SD of 13.498. This shows that FAGE deviate from both sides of the mean by 13.498, meaning that the data is widely dispersed from the mean. The FAGE also has a minimum and maximum value of 3 and 57 respectively.

### Correlation Analysis

The Pearson's pairwise correlation analysis is also conducted between and among financial performance proxied by ROA, and the explanatory variables, HCE, SCE, CEE, FSIZE and FAGE. It explains the degree of association between pairs of variables ranging between -1 and +1 with the diagonal values of 1 which indicate perfect association each variable has with itself. These coefficients measure the strength of association among variables, while the signs depict the direction of association. Table 3 presents the results of the correlation coefficients of the study variables.

**Table 3: Results of correlation analysis for roa hce sce cee fsize fage**

	roa	hce	sce	cee	fsize	fage
roa	1.000					
hce	0.195	1.000				
sce	0.366	0.048	1.000			
cee	0.314	0.476	0.049	1.000		
fsize	0.181	0.138	0.111	0.008	1.000	
fage	-0.008	-0.195	-0.020	0.058	0.176	1.000

Source: STATA 16 output Results based on study data

Correlation is a measure of the strength of the association between variables. Table 3 above shows the correlation between the dependent and independent variables of the study. There is a weak positive correlation of 0.195 (19.5%) between return on asset (ROA), and human capital efficiency (HCE) this implies that a unit increase in HCE will result in 0.195 unit increase in return on asset. Structural capital efficiency on the other hand has a weak positive association of 0.366 (36.6%) this suggest that a unit increase in structural capital result in 0.366 unit increase in return on asset, furthermore there is a weak positive relationship of 0.314 (31.4%) between Capital employed efficiency and return on asset, these



means that a unit increase in capital employed will lead to 0.314 units increase in return on asset, while and firm size (FSIZE) has a positive association of 0.181 (18.08%) with return on asset which implies that a unit increase in FSIZE will cause an increase of 0.181 units in ROA. Finally, firm age (FAGE) has a negative relationship of -0.008 (0.8%) with ROA which implies that a unit increase in FAGE will cause a decrease of 0.0079 units in ROA.

### *Multicollinearity Test*

Table 4 below presents the results of the multicollinearity test which was conducted to determine the relationship between the independent variables to ascertain whether there is high multicollinearity between one explanatory variable and another explanatory variable(s) the results is presented in table 4 below

**Table 4: Results of VIF Test (Multicollinearity Test)**

variable	VIF	I/VIF
hce	3.24	0.309
cee	3.03	0.329
fage	1.28	0.782
fsize	1.15	0.867
sce	1.02	0.983
Mean VIF	1.94	

**Source:** STATA 16 output Results based on study data

Table 3 shows the VIF and tolerance value of the independent variables, in each case, VIF is less than 10 and tolerance level is less than 1 respectively, showing that there was absence of strong multicollinearity among the independent variables. The mean VIF of 1.94 also attests to the fact that there is no problem of Multicollinearity among the variables.

**Table 5 Results of Hausman test Heteroskedasticity and Serial/ autocorrelation**

Hausman		Heteroskedasticity		Serial/ Autocorrelation	
Chi <sup>2</sup>	12.97	Chi2 (26)	124.60	F (1, 25)	9.775
Prob > chi <sup>2</sup>	0.024	Prob > chi <sup>2</sup>	0.0000	Prob > F	0.004

**Source:** STATA 16 Output Results based on study data

The result of the Hausman test in table 5 above with chi2 value of 12.97 and corresponding probability values of 0.0024 which is less than 5% (0.05) implies that the fixed effect regression model is most appropriate for the study. Furthermore, the study conducts the group-wise heteroscedasticity test using residuals of the regression based on the modified Wald statistic. This is because, based on the assumption of homoscedasticity across residuals, the presence of heteroscedasticity leads to bias among standard errors of the estimates. Table 5 shows a Hetttest Chi<sup>2</sup> of 124.60 which is not significant at 5% (P-Value = 0.000) for fitted values of ROA. As a result, the study rejected the null hypothesis, and accepted the alternative hypothesis that the data for fitted values of ROA is heteroskedastic. This was corrected by running a fixed effect regression with Driscoll-Kraay standard errors.

The presence of serial correlation in the panels makes the idiosyncratic errors terms of the coefficients to become smaller than their actual state, while the R<sup>2</sup> is higher (Wooldridge, 2002). The results in table 5 above shows f value of 9.775 with a corresponding probability value of 0.004. This implies that the null

hypothesis is rejected and the study conclude that there is first order serial correlation. This was corrected by running a fixed effect regression with Driscoll-Kraay standard errors to correct the problem of heteroskedasticity and autocorrelation respectively.

### *Fixed effect Regression Results*

Table 6 below present the results of the fixed effect regression which was used to explain the relationship and effect of the human capital efficiency, structural capital efficiency, and capital employed efficiency on financial performance

**Table 6 Fixed effect Regression Results**

Fixed-effects regression with Driscoll-Kraay standard errors

roa	Coef	Drisc/Kraay Std Err	T	P>  t	[95% Conf. Interval]	
hce	1.100	0.858	1.28	0.232	3.041	0.841
sce	-0.029	0.005	-6.49	0.000	-0.040	0.019
cee	23.038	8.022	2.87	0.018	4.891	41.186
fsize	20.246	10.640	1.90	0.089	-3.824	44.315
fage	-1.773	-0.641	-2.77	0.022	-3.222	-0.323
_cons	-87.2618	56.4771	-1.55	0.157	-215.022	40.498
R squared	0.433					
Prob >F	0.000					
F statistics	936.93					
Number of obs	260					

**Source:** STATA 16 Output Results based on study data

The F statistics of 936.93 with R<sup>2</sup> of 0.433 (43.3%) and a corresponding Prob.>F of 0.000 indicated that the model is fit to explain the relationship expressed in the study. Human capital efficiency (HCE) of the sampled listed consumer and industrial goods companies during the study period has a positive relationship with return on asset as explained by the coefficient of 1.100. The result revealed that human capital of the sampled firms has an insignificant effect on financial performance of listed consumer and industrial goods companies in Nigeria. This was shown by a t-value of 1.28 and a P-value of 0.232 which is statistically not significant at 5%. Structural capital efficiency (SCE) of the sampled listed companies during the study period has a negative relationship with return on asset as explained by the coefficient of -0.029. This means that for every unit increase in structural capital efficiency (SCE), return on asset decrease by 0.029 unit. The results also revealed that structural capital of the sampled firms has a significant effect on financial performance of listed consumer and industrial goods companies in Nigeria. This was shown by a t-value of -6.49 and a P-value of 0.000 which is statistically significant at 5%.

Capital employed efficiency (CEE) of the sampled listed consumer and industrial goods companies during the study period has a positive relationship with return on asset as explained by the coefficient of 23.038. This means that for every unit increase in capital employed (CEE), return on asset increase by 23.038 unit. The results also revealed that capital employed of the sampled firms has a significant effect on financial performance of listed consumer and industrial goods companies in Nigeria. This was shown by a t-value of 2.87 and a corresponding P-value of 0.018 which is statistically significant at 5%.

### *Discussion of Findings*

This study examined the effect of intellectual capital on financial performance of listed consumer and industrial goods companies in Nigeria. Specifically, this study sought to determine the effect of human

capital, capital employed and structural capital on financial performance of listed consumer and industrial goods companies in Nigeria. The study found that human capital efficiency of the sampled listed consumer and industrial goods companies during the study period has an insignificant positive effect return on asset. The results are similar to those of Ezejiolor and Ezekwesili (2022) who also found that HCE has no significant effect on financial performance. The results were in direct opposition to those of Gunawan et al (2023), Ahmed et al (2022) and Nkechi, and Onyekachi (2022), Enekwe et al (2022), Obiukwu and Okoye (2021), and Agbi et al (2020) who discovered that HCE has a significant effect on financial performance.

The study also found that structural capital efficiency has a negative significant effect on financial performance of listed consumer and industrial goods companies in Nigeria, which is not in tandem with the a priori expectations. From the results it implies that a unit increase in structural capital leads to 0.0298 unit decrease in financial performance of listed consumer and industrial goods companies in Nigeria. The results are similar to those of Ahmed et al (2022), Nkechi et al (2022) who also found that SCE has a significant effect on financial performance. The results were in direct opposition to those of Gunawan et al (2023), and Sonali and Kaushala (2023) and Asif (2020) who discovered that SCE has no significant effect on financial performance.

Finally, the study found that capital employed efficiency has a positive and significant effect on financial performance of listed consumer and industrial goods in Nigeria. The finding is in line with the a priori expectations. The implication of the above findings is that a unit increase in capital employed will lead to 23.0382 units increase in financial performance. The above findings of this study are in agreement with those of Ahmed et al (2022), Aluwong (2022), Nkechi, and Onyekachi (2022), Haruna (2021), and Nnubia et al (2019) who also found that capital employed efficiency has a significant effect on financial performance. The results were in direct opposition to those of Gunawan et al (2023) who discovered that capital employed efficiency has a negative significant effect on financial performance.

## 5.0 Conclusion and Recommendations

The study examines the extent to which variations in financial performance (proxied by return on asset) are predicted by intellectual capital in the context of the listed consumer and industrial goods firms in Nigeria, considering intellectual capital in the dimensions of human, structural, and capital employed. It obtained panel data from the annual report and accounts of sampled listed consumer and industrial goods firms and analyzed via the panel regressions in order to test the null hypotheses of the study.

The findings revealed that human and capital employed have positive effect on the financial performance of listed consumer and industrial goods firms in Nigeria. This suggests that when companies invest in building human intellect and maintain adequate capital employed it enhances their overall performance. Therefore, the study concludes that efficient and effective investment in intellectual capital gives firms an edge to compete favourably and achieve profit maximization. Specifically, the study concluded that human capital (HC) and capital employed (CE) has a positive effect on financial performance. This depicts that progressive increase in human capital and capital employed brings about an increase in financial performance of consumer and industrial goods firms in Nigeria. On the other hand, conclude that structural capital has an adverse association with the financial performance of listed consumer and industrial goods firms in Nigeria, it means that an increase in structural capital inversely affect financial performance of firms. Based on the summary of major research findings stated above and the conclusions reached, the study recommended that listed consumer and industrial goods firms should strategically invest to optimize capital employed as this could improve the financial performance and that

management of listed consumer and industrial goods firms in Nigeria should invest more on human capital through training and re training of its employees as this has a positive effect on the company' s financial performance and lastly listed consumer and industrial goods firms should implement policies that will reduce investment in structural capital to an acceptable threshold as this could be used to create revenue for the businesses there by improving the negative contribution of structural capital to financial performance.

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