Intellectual Capital and Financial Performance of Selected Consumer Goods Manufacturing Firms in Nigeria

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Abstract
The study looked at how Nigerian consumer goods manufacturing companies' performance was impacted by their intellectual capital (IC). Purposive sampling was employed to obtain a sample size of 17 companies. The financial statements of selected companies that manufacture consumer items were evaluated for a period of nine years, from 2013 to 2021. To analyze the data, multiple regression was utilized. According to the results, human capital, structural capital, and relational capital all significantly and positively affect the financial performance of Nigerian consumer goods manufacturing companies. Therefore, it is recommended that to improve financial performance, both private and public businesses should invest in intellectual capital. Also, manufacturing companies in Nigeria should invest more in human capital development in the areas of education, training, and health in order to enhance the intellectual capacity of the labour force, which in turn will impact favourably on firms' performance.

Keywords: Intellectual capital, Human capital, Relational capital, Structural capital, Financial performance, Return on asset

1. Introduction
For stakeholders, investors, and economic development, a company's financial performance is of dynamic importance. High returns on investment are required by investors, and a well-run company could provide profits for all of its stakeholders over the long term (Sajjad, 2017). Intellectual capital (IC) is a key element that can harness the ability of a company to achieve high returns and attain high financial performance.

In the last decades, the usage of intangible assets was mainly for the service sector to measure, and manage but there was little attention to the manufacturing industry, as they have mainly focused on fixed and financial assets. But currently, intangible assets or intellectual capital (IC) is of equal importance for both the service and the manufacturing sectors (Raiz, Hisham & Sabariah, 2019). "The debate on intellectual capital is furthered by the growing desire of firms to increase investments not only in tangible assets but also in intangible assets" (Tran & Hong, 2020). Investments in goodwill, patents, and copyrights are examples of intangible assets, as are those made in staff knowledge and connections with important stakeholders (Forte, Mantonti & Nicolo, 2019).

The Nigerian economy is expanding quickly, but businesses and organizations are having a difficult time surviving and keeping up with the fierce industry competition. Intangible or intellectual assets eventually come to be acknowledged as the dominant resources in the new economic system, which is commonly referred to as the knowledge economy (Enekwe, Udeh & Akpan, 2022).

Intellectual Capital (IC) being a company's best asset is the knowledge and expertise that is not only the result of an organization's efforts but also represents its most important asset. This knowledge includes everything from patents, copyrights, and trademarks to know-how and processes that can be transferred to other companies or used internally by the same company to enhance its productivity in different ways.

Nigeria's ongoing oil and gas sector failures have brought up some fundamental questions, including how to manage intangible assets. Studies have demonstrated that the inadequate calibre of intangible assets reflected in the financial statement in Nigeria has steadily eroded the trust of those who use financial statements (Enekwe et al., 2022). Salman (2012) in Shafiú, Noraza, and Saleh (2017) argued that because "information and communication technology (ICT) and knowledge have evolved into the most valuable assets for businesses in today's economy, the power of globalization has emerged so quickly." The change from the previous technology age has made it urgently necessary to check through the financial reports of a company and identify any intellectual assets. It is in light of this background that it is considered appropriate to assess how the performance of Nigerian consumer goods manufacturing companies is impacted by intellectual capital.

The study intends to investigate the impact of intellectual capital on the financial performance of selected Nigerian companies that produce consumer goods. Specifically, the objectives of the study are to determine the impact of relational capital on return on assets of selected consumer goods manufacturing firms in Nigeria, to assess the impact of structural capital on return on assets of selected consumer goods manufacturing firms in Nigeria, and to assess the impact of human capital on return on assets of selected consumer goods manufacturing firms in Nigeria.

2.0 Literature Review
This section talks about the conceptual review, review of theories, theoretical framework, empirical review, conceptual framework, and gaps in the literature. The key concepts related to this study - intellectual capital, structural capital, human capital, return on asset and financial performance are discussed here. It is also explained how the elements of intellectual capital relate to return on assets.

2.1 Intellectual Capital
Carlos and Xavier (2020) perceive intellectual capital as "the set of intangible assets that generate value for the company." Intellectual capital is that aspect of the firm which derives from employees' creativity and innovative thinking, whether in the form of new products, services, or marketing concepts. This can be contrasted with physical capital (which refers to physical assets such as machines, buildings, and equipment) and financial capital (such as cash and accounts receivable). Intellectual capital is the intangible value of a corporation. Anything non-physical

that boosts a company's productivity is included in this. Intellectual capital includes staff members' expertise, skills, bonuses, salaries, goodwill, patent, organizational processes, and knowledge contained within the organization.

Apiti, Ugwoke, and Chiekezie (2017) defined intellectual capital as intangible assets like patents, trademarks, copyrights, and other products of human invention and thought that people put into a company. It alludes to the resources (human, structural, and relational capital) that influence the overall competitiveness of a business. Amin, Usman, and Aslam (2018) considered intellectual capital to consist of three key components: "human capital, structural capital, and relational capital." To improve business operations and add value, each of these elements is critical.

Table 1: Intellectual Capital Classification

Human Capital	Relational (Customer) Capital	Organizational (Structural) Capital
• Know-how • Education • Vocational qualification • Job is connected to knowledge • Job is connected to competence • Entrepreneurial spirit, innovative spirit, proactive and reactive ability, the ability to change.	• Brand • The customer • Customer loyalty • Company name • The distribution network • Business collaboration • License deals	**Intellectual property** • Copyrights • Design rights • Trade secrets • Trademarks **Infrastructure assets** • Corporate culture • Information systems • Network systems

Source: IFAC (1998)

2.1.1 Human Capital

Specifically, human capital consists of education, professionalism, and commitment, which is the organization's expertise at an individual level (Poh, Kilicman & Ibrahim, 2018), and human capital involves competencies, skills, training, and employees' motivation (Anuonye, 2015). Human capital is the skill, competencies, training, knowledge, experience, know-how, capacities, and expertise of the human employees of the organization; these are qualities people respect and attribute to the staff of organizations.

2.1.2 Structural Capital

Structural capital is the knowledge created by human capital, which includes ideas, information, productions, techniques, strategies, methodology, policies, management systems, technology, economics, tax, and credit (Forte et al., 2019). Structural Capital is also known as organizational capital or internal capital. It is what is still there when workers leave for the day. Friday, Yeo and Abid (2020) argued that structural capital includes "software and databases, information resources, technologies, organisational processes, intellectual property rights, procedures, databases, customer files, manuals, and trademarks."

2.1.3 Relational Capital

Knowledge about a company's relationships with its stakeholders, within the context of coordinated activities and shared trust, is referred to as relational capital (Jummaini & Hasan, 2019). Relational capital may also be referred to as external capital, relationship capital, and customer capital. Any external relationships a firm maintains, such as those with its partners, clients, suppliers, brand names, and reputation is relational capital.

2.2 Return on Assets (ROA)

Bella and Tarsisus (2018) defined Return on Assets (ROA) as a measure that evaluates a company's capacity to generate profits from both current and non-current assets. Net income to total assets is compared using this ratio. The ability of the corporation to use the asset in its net profit is shown by this ratio's greater value. ROA displays the proportion of profits an organization makes to its total resources (assets). The company's statement of comprehensive income provides the net income, which is defined as the profit after taxes (PAT). The formula for calculating ROA is net income divided by total assets.

2.2.1 Intellectual Capital and Financial Performance

Apiti et al. (2017) argued that "Every business requires resources in the form of physical, financial and intangible assets. Lack of, or inadequate resources of any kind may place a firm in a vulnerable position, and might undermine its success." Intellectual capital is an indispensable resource of the business that has the capability of enhancing its success. "Intellectual Capital is an asset of the company and an increase in intellectual capital should increase the value of the company as well" (Shafi'u et al., 2017). The worth of the business rises as assets, especially intellectual capital, do; hence providing adequate value to all stakeholders involved. Kanishka, Sweta, and Prakash (2020) argued that Intellectual capital (IC) has gained recognition in enhancing the firms' value and gaining competitive advantage in the developed world, thus, all parties involved must comprehend how it affects the profitability of businesses.

Businesses must leverage their intellectual capital to the fullest extent possible to succeed financially in the face of fierce competition. The business can compete with others if it has enough intellectual capital. A company's financial performance is significantly influenced by its intellectual capital, and the more intellectual capital that is available, the better its financial performance will be with good and efficient exploitation and management of intellectual capital (Tiurma & Gantino, 2020; Law, Adem & Siti, 2018; Enekwe et al., 2022).

2.2.2 Intellectual Capital and Return on Asset (ROA)

According to Shafi'u et al. (2017), financial success, as assessed by ROA, was the dependent variable that showed how well the company used its total assets while maintaining its financial policy. Additionally, it offers details regarding the value added to the business that improves its success. ROA is a financial indicator that demonstrates how well companies use the resources at hand to increase profitability. It is known as earning power, and it serves as an indicator of how successfully the company has used its assets (Apiti, et al., 2017). ROA can be used to evaluate a company's performance by comparing its profit (net income) to the capital it has invested in assets. When management uses available resources more effectively and efficiently, the return is

higher. ROA is computed by dividing net income by total assets and represents how well businesses use their total assets (Jian & Bingham, 2018). ROA demonstrates how well a business is utilizing its resources and assets to boost revenues.

2.2.3 Human Capital and Return on Asset (ROA)

Oseni and Igbinosa (2015) argued that "human capital has become a significant factor in the success of the organization and is often regarded as one of the most valuable assets of corporations." A company does not succeed by owning tangible assets like buildings or sophisticated machinery. A company succeeds because its employees are the ones with the highest score of human capital (Oseni et al., 2015). The workforce's abilities, skills, and expertise make up a company's human capital. Without the sheer intelligence of their workers, the majority of businesses could not accomplish their goals, but (Oseni et al., 2015). In both theory and practice, employees have become a highly valued resource in businesses. Human capital is the most essential and necessary component of intellectual capital, yet being the most challenging to manage (Apiti, Ugwoke & Chikezie, 2017); therefore, human capital enhances ROA of firms (William, Gaetano & Giuseppe, 2019).

2.2.4 Structural Capital and Return on Asset (ROA)

"Structural capital remains the pool of knowledge that is left in the databases of a firm at the close of work" (Luminita, Dan & Anca, 2015) which includes processes, databases, information systems, regulations, intellectual property, and culture, among other things. Structural capital influences ROA of firms as evidenced in some studies (Shafi'u et al., 2017; Pendo, 2020; Friday et al., 2020).

2.2.5 Relational Capital and Return on Asset (ROA)

Relational capital refers to the value of commercial ties with people and organizations that are connected in some manner to the company's ability to create value. "Customer relationship management (image creation, loyalty, partner and investor network), networks with suppliers, distributors, trade associations, and partners, as well as brand management, are all examples of relational capital" (Carlos & Xavier, 2020). The relationships a business has with its stakeholders, including its customers and creditors, affect its ROA. Organizations need to engage with their environment and build relationships to survive in a knowledge-based society. These connections assist businesses in acquiring and disseminating knowledge that is crucial to their operations (Murale, Gyanendra & Preetha, 2018). Firms' ROA is significantly influenced favourably by relational capital (Shafi'u et al., 2017; Jian & Bingham, 2018; Ray & Murwaningsari, 2019).

2.3 Theoretical Review

The theories that are related to this study are discussed in terms of the author, assumptions, argument, criticism, and authors who adopted the theory. The theoretical framework is also discussed in line with the theory that underpins this study and the reasons for the adoption of the theory.

2.3.1 The Balanced Scorecard Theory

Robert Kaplan and David Norton (1992) postulated the theory of a Balanced Scorecard which assumes that there are four perspectives in which the performance of a company can be measured. These perspectives include financial, customer, internal, and learning perspectives (Farshad, 2012). The main challenge of the theory is that it can be difficult and time-consuming to implement. A balanced scorecard is a tool used by management to assess and enhance the efficiency of internal business processes. It provides both financial and non-financial performance techniques to provide decisions. Organizations are viewed from four perspectives: the learning and growth perspective which is the training and development of human capital, the business process perspective which are internal controls and processes called structural capital, the customer/relational viewpoint which suggests that clients are always sought after vendors who meet their needs, and the financial standpoint which emphasizes the financial benefits to the organization.

2.3.2 The Resource-Based Theory

Werner felt (1984) propounded the resource-based theory which contends that a corporation can only attain a competitive advantage by using all of its resources effectively and efficiently. Solihin (2012) in Ida and Nurkholis (2017) argued that "According to the resource-based theory, a distinctive corporate resource with core skills has a significant impact on the creation of a strategy and the effectiveness of its implementation." The firm's resources, which might be tangible or intangible, can assist the organization in putting strategies into action that will increase efficiency and effectiveness. The main criticisms of this theory according to Onno (2008) is that "there is no consensus on the resource-based view's unit of analysis, which additionally is held to be too narrow and definitions are said to be all-inclusive and even pleonastic." Pendo (2020) adopted the theory.

This study was anchored on the balanced scorecard theory because it indicates that a balanced scorecard's viewpoint which includes financial, customer, internal, and learning are regarded as intellectual capital made out of people, relational and structural capital which provides both financial and non-financial performance techniques to provide information to stakeholders to make well-informed decisions.

2.4 Empirical Review

Yerisma, Arfan, and Chandra (2021) looked at how capital employed, human capital, and structural capital impacted return on Equity (ROE) of businesses in the consumer products industry. Consumer goods industries that were listed on IDX between 2015 and 2019 make up the population. Purposive sampling was employed in this study with 155 observations from 31 firms. Panel data regression was used to analyze the data. E-views 9 program was used as the data processing application. The results showed that capital-employed efficiency and structural capital efficiency had a positive and large impact on financial performance, but human capital efficiency had a positive but little impact. This supports what Shafi'u et al. (2017) found.

Abdelmohsen and Gehan (2020) examined the financial performance of the financial and service sectors of the Bahrain Bourse for five years, from 2013 to 2017. Data from 29 chosen organizations, totalling 145 firm-year observations were analyzed using the canonical correlation

analysis approach. Findings from the financial industry show that structural capital, customer capital, and human capital all have positive correlations with company performance, except for labor expenses, which have a negative association. While structural capital is thought to have the least impact on the performance of the organization, human capital is the most important component of the IC. Additionally, the findings for the services sector demonstrated that IC is strongly related to business performance. This concurs with the conclusions reached by (Apiti, Ugwoke & Chiekezie, 2017).

Tia and Khoirul (2020) analysed "the influence of human resources, structural capital, customer capital, good governance, and influence on Company Profitability." Manufacturing companies that were listed on the Indonesia Stock Exchange between 2015 and 2017 formed the population of the study. Purposive sampling was used to gather the 38-company sample. Obtaining secondary data from IDX was the method used to collect the data. Multiple regression analysis was used to conduct the research, and the findings revealed that profitability is negatively and insignificantly impacted by human capital. Both relational and structural capital has a strong, favorable impact on profitability. The result of the study on human capital disagrees with the findings of William, Gaetano, and Giuseppe (2019) while the results on structural capital and customer capital (relational capital) are in line with the findings of Yerisma, Arfan, and Chandra (2021), Jian and Bingham (2018) respectively among others.

Pendo (2020) conducted a study on "Does Investing in Intellectual Capital Improve Financial Performance?" Evidence from a panel of companies that are listed on the Tanzanian DSE provided a fresh perspective on intellectual capital and how it relates to enterprises' performance in Tanzania. It also examined intellectual capital across the service and manufacturing sectors as a whole. Data between 2010 and 2019 were analyzed using panel regression analysis; performance was gauged using SG, ROA, ATO, and Tobin's Q. The study found a strong positive correlation between structural capital efficiency and ROA. The effect of human capital (HC) efficiency and capital employed (CE) efficiency, however, were negative, suggesting that the enterprises did not make adequate investments in their employees' skills and capital. This conflicts with the conclusions reached by Shafi'u et al. (2017), who found that structural capital and capital employed impact positively and significantly on ROA.

William, Gaetano, and Giuseppe (2019) investigated "the impact of intellectual capital on a firm's performance and market value: empirical evidence from Italian listed firms" to deepen the comprehension of Intellectual Capital (IC) in the context of listed Italian companies. To quantify intellectual capital and look into the connection between it, financial performance, and the market value of businesses, researchers employ the Value Added Intellectual Coefficient. Various Ordinary Least Squares regression models were applied to 135 Italian-listed companies as samples for the years 2008 to 2017. The results revealed that, when considered collectively, IC has a favorable effect on enterprises' financial performance as gauged by their profitability and revenue growth as well as on market value. However, when individual elements of intellectual capital are taken into account, human capital efficiency outperforms structural capital efficiency and capital utilized efficiency in terms of its impact on the financial performance of businesses. The findings support Pendo's (2020) contention that capital employed (CE) has a

detrimental impact on financial performance, but they are not in favour of the contention that human capital (HC) has a beneficial impact on a firm's financial performance.

Jian and Bingham (2018) investigated the relationship between intellectual property, financial performance, and sustained company growth. Data gathered from 390 industrial businesses listed on the Korean Stock Exchange between 2012 and 2016 was used to fit multiple regression models. The analysis' findings demonstrate that intellectual capital (IC) has a favorable effect on financial performance and long-term company growth. Physical capital, human capital, and relational capital are all factors that positively affect a company's performance and sustainable growth. Structural capital (SC), which is further captured by innovative capital, has a negative impact on the performance of Korean manufacturing businesses. The researchers concluded that Korean manufacturing firms that are more efficient in their use of intellectual capital have higher profitability and more sustainable growth. The findings of Shafi'u et al. (2017), who discovered that structural capital significantly and positively affects financial performance, do not agree with the outcome of this analysis, particularly concerning structural capital.

Murale, Gyanendra, and Preetha (2018) investigated "business relational capital and company performance: insight from the Indian textile industry." The study aims to determine how relational capital management affects a firm's performance in India's textile sector. In the Tiruppur region, the survey was done among managers of top textile manufacturing companies. The partial least square approach was used to empirically evaluate the hypothesis that had been drawn up for the study, and it was discovered that the models had validity at P 0.05. The findings, which are in line with those of Jian and Bingham (2018), show a positive relationship between relational capital and company performance.

Shafi'u et al. (2017) used the Pulic model of intellectual capital, also known as the value-added intellectual coefficient to examine "the effect of intellectual capital on the financial performance of listed Nigerian food products companies" over five years from 2010 to 2014. The hypotheses were put to the test using a regression model, and the findings indicate a positive and significant impact of intellectual capital on financial performance. The researcher concluded that relational capital (capital employed) and structural capital (SC) significantly and positively affects ROA. Results concur with those of Yerisma, Arfan, and Chandra (2021) and contradict those of Jian and Bingham (2018), who found that structural capital (SC) has a negative impact on the performance of companies.

To ascertain the relationship between intellectual capital and firms' financial performance and to assess the impact of intellectual capital management on firms' financial performance. Apiti, Ugwoke, and Chiekezie (2017) examined intellectual capital management and organizational performance in Nigeria. The research used an ex-post facto methodology. The Nigerian stock exchange lists four businesses from the food and beverage sector. Secondary data from the annual reports of the selected businesses were used. To quantify intellectual capital, the value-added intellectual capital coefficient and intellectual capital efficiency were used, while ROA was used to assess financial success. The Pearson moment correlation coefficient was used to analyze the association between intellectual capital and organizational reported financial performance, and linear regression was used. The conclusions demonstrate the strong correlation

between intellectual capital and firms' financial success and the influence of effective management of intellectual capital on firms' reported financial performance. This is consistent with the findings of Shafi'u et al. (2017), who came to the conclusion that structural capital (SC) and capital employed (CE) positively and significantly affect ROA.

Although there are numerous studies on the connection between intellectual capital and the financial performance of businesses, little has been done, particularly in the manufacturing sector, which is crucial to Nigeria's economic progress (Smriti & Das, 2018). Additionally, few studies examined up-to-date research on consumer goods manufacturing firms in Nigeria (Apiti, Ugwoke & Chiekezie, 2017; Shafi'u et al., 2017; Jian & Bingham, 2018). This was the gap that this study filled by examining nine years' financial statements from 2013-2021 to provide adequate data for analysis and the inclusion of the most recent financial years which is relevant and would provide an up-to-date study about the effect of intellectual capital on the financial performance of selected consumer goods manufacturing firms in Nigeria.
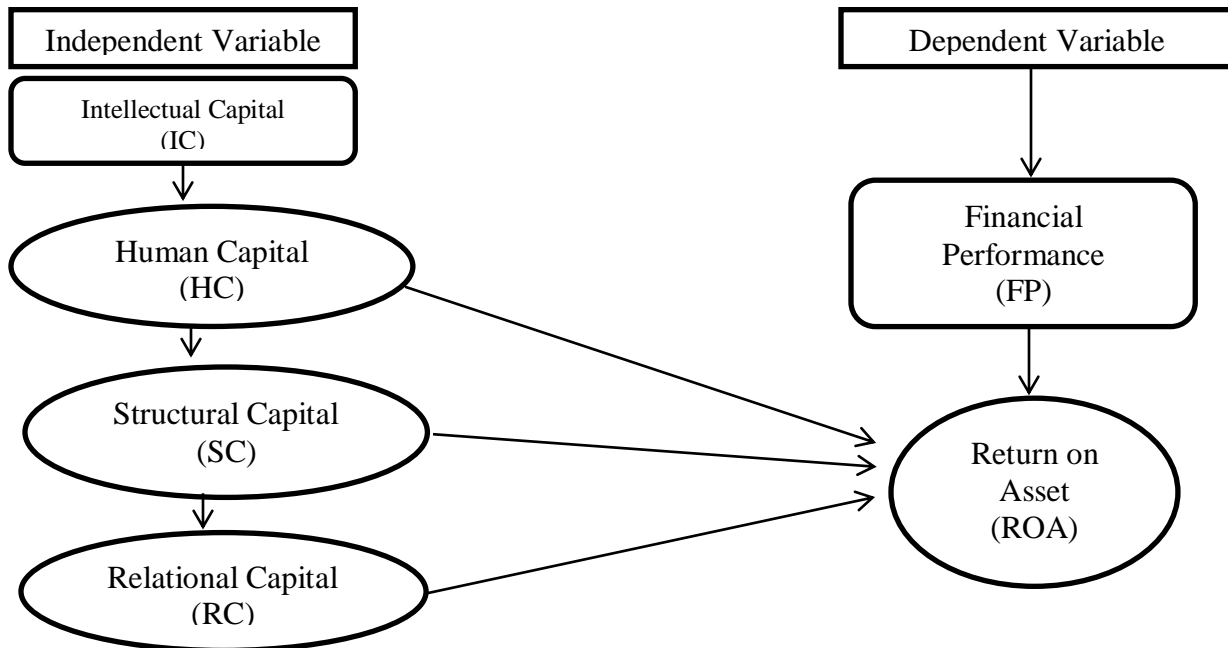
2.5 Conceptual Framework

Figure 1: Conceptual Framework of Variables
Source: Researcher's Concept (2022)

The link between financial performance and Intellectual capital is seen in Figure 1. The three elements that make up intellectual capital can boost a company's financial success.

3. Data and Methods
An ex-post facto research design was used in the study. Twenty-one (21) consumer goods manufacturing companies listed on the Nigerian Stock Exchange as of June 2022 make up the

study's population. Using the purposive sampling technique, the sample size of Seventeen (17) consumer products manufacturing companies was determined. Data were gathered from chosen companies' financial statements throughout nine years (2013–2021) fiscal years. The sampling companies' financial accounts were downloaded from the Nigerian Exchange Group website. The most recent financial years would give current information about the effect of intellectual capital on the financial performance of sampled selected consumer goods manufacturing enterprises in Nigeria. Nine years will provide appropriate data for the study. Total assets, net profit, intangible assets, employee benefits, and selling and distribution costs are among the information gathered from the financial statement that is pertinent to the study. Multiple regression was used in data analysis.

3.1 Model Specification
The model was adapted per the research of Ugwuanyi and Onyekwelu (2020) on the impact of intellectual capital on firm revenue and market valuation in Nigeria's listed information and communication technology (ICT) industry. The study digresses based on the removal of some variables such as gross revenue per share (GRPS) and capital employed; while relational capital and return on asset were included. The model is mathematically stated as follows:

FP = f (IC)……………………………………..... (i)
IC = f (HC, SC, RC) ………..………………..… (ii)
$$ROA = \beta_o + \beta_1 HC_i + \beta_2 SC_i + \beta_3 RC_i + \mu \dots \dots (iii)$$
FP = Financial Performance of Firms = Dependent variable
IC = Intellectual Capital = Independent variable

Where:
ROA =Return on Asset
HC = Human Capital
SC = Structural Capital
RC = Relational Capital
β_1, β_2, and β_3 = Independent variables coefficient
i = firm = 1-17
t = period t = 2013-2021
 μ = error term
A-priori expectation = β1- β3 > 0

4. Results and Discussions

4.1 Descriptive statistics
The observation provides information on the number of observations considered in the study. The average ROA of selected consumer goods manufacturing firms is 0.072194 with a median ROA of 0.039756 which indicates that ROA is positively skewed. The standard deviation of 0.614382 shows evidence of a small spread from the mean value, a minimum value of -2.359907, and a maximum value of 6.181679. Also, the average human capital (HC) is 12.86575 and a median of 13.78463 indicates that the variable is negatively skewed as the median value is greater than the mean. A standard deviation of 4.264958 shows evidence of widespread, a

minimum value of 0, and a maximum value of 22.18524. Furthermore, the average relational capital (RC) of 14.65422 and median of 15.09748 indicates that the variable is negatively skewed and the value of the standard deviation of 2.778412 show evidence of a small spread from the mean RC, a minimum value of 6.886532 and a maximum value of 22.72993. Lastly, the average structural capital (SC) of 7.846899 and the median value of 10.01878 indicates that SC is negatively skewed with a standard deviation of 6.441321 showing evidence of widespread, minimum SC of 0 and a maximum of 19.65054. Overall, the majority of the variables are negatively skewed except ROA and show evidence of spread around the mean.

Table 2: Descriptive statistics

	ROA	HC	RC	SC
Mean	0.072194	12.86575	14.65422	7.846899
Median	0.039756	13.78463	15.09748	10.01878
Maximum	6.181679	22.18524	22.72993	19.65054
Minimum	-2.359907	0.000000	6.886532	0.000000
Std. Dev.	0.614382	4.264958	2.778412	6.441321
Skewness	6.885321	-1.679667	-0.287662	-0.120662

Source: Authors' computation 2022

4.2 Test of Variables

4.2.1 Correlation Matrix

Testing for the correlation among the variables helps to avoid the possible problems of multicollinearity. Multicollinearity may not be a serious problem if the magnitude of the correlation coefficient is low. Table 3 shows that in all, no correlation coefficient exceeds 0.5. This indicates that the correlation of the variables is not serially correlated.

Table 3: Correlation Matrix

	ROA	HC	RC	SC
ROA	1.000000			
HC	0.028983	1.000000		
RC	0.079904	0.176010	1.000000	
SC	0.050261	0.178470	0.452177	1.000000

Source: Authors' computation 2022

4.2.2 Hausman Test

To examine the effect of intellectual capital on the performance of selected consumer goods manufacturing firms in Nigeria

The Hausman test was conducted to choose between fixed effect and random effect; this will reveal which model is more suitable. The fixed effect is preferable if the Hausman p-value is less than 5%; otherwise, the random effect is preferable. From the result, the Hausman test result of 0.9987 indicates that the best model for this study is the random effect model.

Table 4: Hausman Test

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.028803	3	0.9987

Source: Authors' computation (2022)

4.2.3 Random effect Model

The independent variable is responsible for 60% of the variation in ROA, and other variables not included in the model account for the other 40% of the variation. The coefficient of determination (R^2) of 0.590180 makes this clear. The model also has an f-statistic fit of 0.000000. Regression analysis reveals a considerable positive impact of human capital on asset return. The ROA is also positively and significantly impacted by relational capital. Additionally, returns on assets are significantly positively impacted by structural capital. This shows that whereas an increase in relational capital boosts the returns on assets of consumer goods manufacturing firms in Nigeria by 1.55%, an increase in human capital only raises those returns on assets by 0.198%. Additionally, growth in structural capital boosts the returns on assets of consumer goods manufacturing firms in Nigeria by 0.15%.

Table 5: Random effect of intellectual capital on returns on asset of selected consumer goods manufacturing firms in Nigeria

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2013-2021				
Periods included: 9				
Cross-sections included: 17				
Total panel (balanced) observations: 153				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.337264	0.312233	1.080166	0.0000
LHC	0.001982	0.012520	-0.158291	0.0044
LRC	0.015529	0.021202	-0.732410	0.0451
LSC	0.001531	0.009149	-0.167342	0.0173
	Effects Specification			
			S.D.	Rho
Cross-section random	0.000000		0.0000	
Idiosyncratic random	0.643943		1.0000	
	Weighted Statistics			
R-squared	0.600817	Mean dependent var		0.072194
Adjusted R-squared	0.590180	S.D. dependent var		0.614382
S.E. of regression	0.618418	Sum squared resid		56.98366
F-statistic	3.408090	Durbin-Watson stat		2.341768
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.600817	Mean dependent var		0.072194
Sum squared resid	56.98366	Durbin-Watson stat		2.341768

Source: Authors' computation (2022)

4.4 Discussion of Findings

Consumer goods manufacturing firms' financial performance is positively and significantly impacted by intellectual capital. This indicates that Nigerian consumer goods companies' financial performance is anticipated to improve when intellectual capital increases through improvements in human capital, structural capital, and relational capital. This supports the research by Shafiu, Noraza, and Saleh (2017), who found that structural capital significantly and positively affects returns on assets. To put it another way, adding structural capital enhances financial performance, which is attained by giving employees the best technology for the job and sound business plans. According to Mehri et al. (2013), structural and human capital are also important and beneficial factors in a firm's performance. These factors improved market value, profitability, and productivity. Human capital, according to Setiawan and Prawira (2018) has the greatest impact on company success. Results of the study by Sardo, Serrasqueiro, and Alves (2018) also show that relational, structural, and human capital, which are regarded as crucial components, have a beneficial impact on financial performance. As a result, structural and human capital are valued as elements that facilitate the development and upkeep of long-term connections within organizations.

5. Conclusion and Recommendations

Human capital, structural capital, and relational capital all have a positive and significant impact on the ROA of consumer goods manufacturing companies. As the three elements of intellectual capital increase, so does the ROA, aiding in the enhancement of companies' financial performance. The growth of intellectual capital through improvements in intellectual capital is projected to boost the financial performance of Nigerian companies that manufacture consumer goods. The study recommended that manufacturing companies should invest in intellectual property to boost their financial performance. Manufacturing companies in Nigeria should invest more in human capital development in the areas of education, training, and health in order to enhance the intellectual capacity of the labour force, which in turn will impact favourably on firms' performance.

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