
Intellectual Capital and Corporate Sustainability Growth in Firms Listed in Nigerian Stock Exchange

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Abstract: The objective of this research was to examine the influence of intellectual capital (IC) and its components on corporate sustainability growth in firms listed in Nigerian stock Exchange. Furthermore, this paper aimed at determining the constituent of the intellectual capital that has more predictive ability on business sustainable growth in Nigeria. A sample size of 10 listed consumer goods firms over a period of ten years (2011- 2020) was used as sample size for this study. Regression analysis techniques was used to investigate the effect of Intellectual Capital and its components on business sustainability growth. Results from the analyses revealed that intellectual capital (IC) as proxied by the M-VAIC model establishes a significant influence on corporate sustainable growth, ($\text{AdjR}^2 = 0.128$, F-Stat = 1.6308; p-value = 0.038). Notably, the findings also showed that almost all the independent variables namely, Physical Capital, Human Capital, Structural Capital and Relational Capital exert significant effect in predicting corporate sustainable growth. Furthermore, the results revealed that physical and human capital are the major components of IC that exert powerful influence on corporate sustainable growth. The study concludes that the overall intellectual capital components play an essential role in driving the listed consumer goods in Nigeria in the wheel of sustainable growth.

Keywords: Intellectual Capital, Human Capital VAIC Model, Consumer Goods, Corporate Sustainable Growth

1. Introduction

The corporate sustainability growth has been challenged by the current worldwide pandemic, which has been ravaging the international economy and altered the way corporations are conducting their businesses [13]. Corporate sustainability has elicited researchers' interest in recent time because of the need for organizations to continue to meet their short to long term financial objectives and to prevent organizations from going into distress and ultimately collapsed [1]. In the context of business, the construct, sustainability, denotes the capability of a company to subsist and prosper in a changing, challenging, and competitive business situation. Sustainability involves meeting the requirements of the contemporary without subordinating the capability of the forthcoming generations to be able to cater for their needs. The idea of sustainability is encapsulated in three foundations: financial, environmental, and social [15]. These pillars are also referred to as profits, planet, and people. Essentially, businesses should design their model in such a way that the

organization should be sustainable, because an organisation may not be sustainable even though the firm's objective may have environmental sustainability. Financial sustainability has a comparative or total size that cannot be ignored in profit-oriented companies [15, 1]. Theoretically, a firm is said to be sustainable if it can meet up with its overhead cost, defray due obligations, pay returns to the providers of capital, and retained for future growth. There is tradeoff between financial sustainability and financial risk. A company that is financially geared will probably witness low stability while the companies with a lesser financial risk will most possibly display greater financial steadiness. The liquidity status of a company is related to its financial risk as well as its stability. A firm that is liquid is seen to have the ability to settle its obligations and, hence adjudged to be more stable. However, a firm that is unable to defray its payment obligations when they fall due can be perceived as insolvent and hence lacks financial stability.

The importance of study on business sustainability was popularized towards the end of 1990s, during the global

financial meltdown. These companies so evaluated to be solvent, stable and growing in the long run went into liquidation because the so-called long term had mirrored end from the financial reporting system [5]. The efficiency of debt covenant is lessened in a company that has hidden investment prospects such as intangible assets [3]. Further to the above, the shareholders in the firms with greater proportion of their funds in intangible assets can manage the agency costs of debt, by dipping the quantity of risky debt their firm is exposed to. Organization that commits funds in intangibles have a stiffer debt capability. Thus, the consequence is that firms that have a greater volume of intangible assets can accommodate few debts relative to firms that commit their funds in physical assets, for examples, property plant and equipment.

In the recent past, some of the companies that went into liquidation reported every other items, materials, machines and money, but neglected the most critical assets-Intellectual capital while other factors of production were considered [5]. The topic of intellectual capital has been extensively discussed by scholars since the early 1990s. The literature uses the terms "intellectual capital", "intangible assets", "intellectual asset", and "knowledge asset" interchangeably, providing a wide range of definitions. The agreed upon features of all intangible assets, as prescribed by IAS 38, are that intangibles are identifiable non-monetary legally protected assets lacking physical substance, providing future economic benefits, and obtained from past activities such as research and development, training, contractual agreement [38]. Intellectual Capital (IC) has been extensively recognized as that inborn characteristic typically developed by a company, which propels it on the wheel of value creation and value sustainability [55]. Generally, the idea of Intellectual Capital can be assumed to have originated from explanation of the self-motivated influence of persons: The Intellect. Thomas Stewart, was the first person to be credited with the first of such definition in 1997. In his publication, named *BrainPower*, he described Intellectual Capital (IC) as encompassing the whole thing everyone in an entity knows that provides the the company a competitive advantage in the marketplace. He further espoused IC as that information that converts fresh resources and creates them to be more valued, adding that for any information to be named as 'IC', the information must have the capacity of being utilized to generate wealth and ensure the long-term sustainability and survival of companies. Employees need constant development to meet challenges and higher responsibilities and attain sustainability. The organisation sustainability relies on human innovation and creativity. Corporate sustainability involves the capability of a business to accomplish short- and long-term monetary obligations such as bills payable and unsecured bond as and when they are due. A firm is faced with a threat of insolvency if it is unable to meet up with its overhead expenditures and going concern status of the firm may be threatened.

Akintoye posited that the four (4) state of current

stability thinking are measured by short term profitability, short term solvency, long term solvency and stability and growth [5]. Nigerian firms, particularly the consumer goods subsector of the economy, have been bedeviled with the challenges of meeting up with their short-, medium- and long-term obligations largely because of the neglect of the most critical part of capital, which is the intellectual Capital that can sustain the existence of the business in the longer run [5]. Several researches have been focused on the influence of Intellectual capital on the profitability and/or productivity of corporations. Most of the studies were carried out in the developed economies viz [41, 55, 34, 14, 38, 48, 7].

The corporate sustainability and going concern, which are very critical for continued existence of firms, have been neglected, and the focus of various researchers are on business profitability.

Despite the global acceptance of intellectual capital in the knowledge economy, there are limited empirical evidence to validate its impact on corporate sustainability growth in sub Saharan Africa. The present study endeavors to focus on this shortcoming in the literature by creating a model for evaluating the relationship of the mechanisms of intellectual capital and corporate sustainability growth. Based on our knowledge, there are shortage of investigation paper that concentrated on the impact of Intellectual capital on corporate sustainability growth on the listed consumer goods in Nigeria. This study intends to fill these topical and methodological gaps.

Therefore, the key questions addressed by this study are:

RQ1: Does Intellectual Capital significantly influence corporate sustainability Growth?

RQ2: Does human capital have a significant effect on business sustainability growth?

RQ3: To what extent does structural capital impact significantly on corporate sustainability growth?

RQ4: Does Relational capital significantly impact corporate sustainability growth?

RQ5: To what extent do the controlling effect of firm size and leverage influence the effect of Intellectual Capital on the corporate sustainability growth?

The remaining part of the work is structured as follows: Section 2 reviews previous literature and development of hypotheses. Section 3 discusses the theoretical consideration. Section 4 presents the research methodology. Section 5 presents empirical findings and analysis. Section 6 shows the conclusion/summaries and provides suggestions for additional study.

2. Literature Review and Hypothesis Development

2.1. Corporate Sustainability

The concept of sustainability development was originally launched in a document titled the 'limits of growth' which was issued in 1972 [29]. The paper was subsequently

replicated in the report of Brundtland in 1987, and then again distributed in the World Commission on Environment and Development (WCED) in 1989 [14]. The article explained the sustainability development of contemporary without disregarding the requirements of the upcoming generations. As espoused in the document, the term sustainability is hinged on two central ideas; the essential requirements of the poor and the societal restriction to take care the requirements of the future [23]. Sustainability also involves the triple bottom line (TBL), which entails: profit, people, and planet or which can be referred to as 3Ps. The phrase Sustainable Growth has several disciplinary applications and denotation. Though, from the viewpoint of financial, sustainable growth entails a reasonable growth that can sustain profit for the interests in the future. The idea of business sustainable growth came into the limelight with the outstanding scholarly work of Higgins published in 1977, wherein he initially put forward the practice of model for sustainable growth in describing the pragmatic threshold for developing companies. The notion of sustainable growth rate explains what revenue growth is in harmony with the certainties of the corporation [57]. In specific term, the focus of sustainable growth rate is to describe the ultimate yearly growths relative to revenues a business can provide, without allotting any additional new shares or changing its monetary policies [40]. The notion Tripple Bottom Line and sustainability are commonly used in verse versa [6]. Sustainable development can be explained as the positive plans executed by a firm to accomplish its various interest groups' aspirations while thinking about the requirements of the generation that are forthcoming [9]. However, the purpose of sustainability is to achieve equilibrium of various aspect of performances [9]. Therefore, the mistaken belief of the concept is in abundance, with numerous conceptual and hypothetical models being related to it. The long-term solvency and corporate sustainability are very crucial determining factors of how a firm is far away from collapsing [45]. Based on diverse views, corporate sustainability in this paper means the firms ability to make revenue and sustain same in the future.

2.2. Intellectual Capital

There is a general acceptability that Intellectual Capital (IC) is that inherent feature typically gained by an entity, that propels it on the pedestal of value formation, value sustainability and value addition. Consequently, various scholars and researchers have suggested numerous explanations. Essentially, the idea of Intellectual Capital emanated from the explanation of active influence of persons; the 'Intellect' [53]. Thomas Stewart, the inventor of the concept, gave the first definition of the concept. In his article titled, Brain Power, in 1997, described Intellectual Capital (IC) as the total of the whole thing every person in a company is aware of, that provides the organization competitive advantage in the market place. He went ahead and explained that IC is that known- how that translates raw inputs and creates valuable, adding that for any information

to be labeled 'IC', the knowledge should have the capability of being able to create value for the organization. Another dimension of non- physical assets relates to those known as "concealed," with special features, as well as the organizational culture [49]. The collection of these hidden non physical assets have been known as intellectual capital. An entity is made up of physical resources and intellectual assets, and intellectual capital involves the blend of non-tangible assets which empowers the corporation to carry out its business [16]. Intellectual capital is that set of non physical assets possessed by a firm which has the capability of giving an economic advantage over time if properly managed [37].

2.3. Intellectual Capital and Corporate Sustainability Growth

Higgins suggested the notion of the sustainable growth rate (SGR) to explain best possible development from an economic standpoint presuming a specified plan with obviously stipulated fiscal structure situations [32]. Basically, it depicts the highest level to which a firm could utilize its identifiable in-built assets to accomplish its growth in the absence of contracting loans from financial organizations. Businesses that keep the SGR will eventually evade fruitless development. Corporations that control the SGR should be able able to escape stretching financial assets and overstretching their debt financing. In the context of Business, innovative capital (e.g., R&D and intellectual property rights) are determining factors of inside resource distribution, recent product improvement, and new market expansion. R&D practices with greater risks compel firms to create a robust structure. Further to the above, stakeholders have a significant influence on the continued existence of a business. The closer the relationship with various stakeholders, the greater impact Relational capital on the market behaviors of stockholders. For consumer goods companies, HC and SC are special resources that are not easy to emulate by rivals. Thus, IC is the key motivating influence for the sustainable growth of consumer goods companies in Nigeria. The first hypothesis can be stated as follows.

Hypothesis one (H₁) Companies with higher Intellectual Capital tend to have higher sustainable growth.

2.4. Capital Employed Efficiency and Firm Sustainability Growth

Pulic contends that it is important to take into consideration financial and physical resources in order to have a wider view of the effectiveness of value generating resources [36]. Past reserchers discovered that physical capital has a strong positive linkage with the firm's performance [26, 18, 62, 17, 19, 21, 10, 59]. However, few schollars believe that physical capital has negative or no relationship with the firm's performance [18, 2, 42]. Nevertheless, as regards corporate sustainable growth, empirical evidence suggests that physical capital exercises a

significant positive influence on corporate sustainable growth [59]. Thus, we hypothesize:

H₂: There is a significant positive impact of Capital Employed Efficiency (CEE) on the corporate sustainability growth.

2.5. Human Capital and Business Sustainability Growth

Human Capital (HC) is the greatest fundamental element in IC because it is the basis for all improvements and tactical regeneration inside the business entity [12]. The Human asset is non-physical assets which ought to be capitalized instead of expensing them because there are expected short – long term benefits that would inflow into the organization through the competency and skills of new employees as well as the impact of learning curve. To the extent that innovative concepts validate their benefits in the perspective of knowledge, expense incurred in employee training and other initiatives geared toward building capacity, should be capitalized. Human assets investment should be recognized in the statement of financial position owing to the economic benefits that are expected to inflow into the entity in the future [8]. Human Capital (HC) denotes the capabilities, implied proficiencies and general skilled centric of personnels in an entity [13]. Whereas, Brock contends that HC is the fresh brainpower, talents, and know-how of the human players in the business [15]. Previous experimental observations, recommend that the companies with greater human assets proficiency showed a greater economic or general corporate productivity [25, 39, 18, 24, 63, 10, 52, 17, 35, 20, 46, 42]. Put differently, the effectual application of human capital generates greater financial and general performance of the business. However, limited scholars observed that HCE displays an adverse impact on the productivity of a business [56, 62]. Though, in relation to income, HCE establishes a notable progressive influence on the entity's income generation [19, 22]. Recognizing similar observation, HCE, to a larger extent, affects business sustainability growth [60]. Therefore, we hypothesize.

H₃: Human Capital Efficiency (HCE) has a positive significant influence on the attainment of business sustainability growth.

2.6. Structural Capital and Corporate Sustainability Growth

Structural capital denotes the business capabilities in the administration of hardware, software, database, patent and managerial structure that sustain the performance of personnel [25]. It can transmute human assets into structural assets, and ensure that organizations possess such assets. Structural capital allows organization to accomplish an economic advantage in the changing business environment and stimulate the sustainable growth of the business [39]. Firms which efficiently deploy structural capital will have a competitive edge because of its scarcity. Structural capital describes to a larger degree, the efficiency

of the innovative knowledge creation procedure and management of an organization [43]. In Nigeria, Popoola, Eden and Agbi, established that the structural capital exerts positive and substantial impact on the business performance of listed oil and gas corporations in Nigeria [47]. Structural capital efficiency (SCE) has been discovered to exerts a substantial positive effect on entity's performance [10]. Equally, it is estimated that Structural capital efficiency would exhibit a substantial positive relationship with corporate sustainable growth also. Therefore, we hypothesize:

H₄: Structural Capital Efficiency has a significant positive influence on achieving Corporate Sustainability Growth.

2.7. Relational Capital and Corporate Sustainability Growth

The term Relational capital (RC) explains outside associations with contractors and clients of the business, which enables it to carry out commercial activities in a well-organized and efficient way [52]. In specific terms, it signifies the capability of a business to intermingle with its prospective outside participants. Marti contends that relational capital entails the capacity of a firm to interrelate with various participants that have interest in the business in order to propel the company in the wheel of creation of wealth by augmenting structural and human capital [36]. Previous scholars propose that relational capital indicates a positive effect on the business and financial performance [54, 25, 31, 46, 59]. Furthermore, the study of Xu and Wang showed that relational capital has a significant positive impact on corporate sustainable growth [59]. Hence, we hypothesize:

H₅: Relational Capital Efficiency has a significant positive influence on accomplishing Corporate Sustainability Growth.

3. Theoretical Consideration

3.1. Resource Based Theory

Wernerfelt propounded the Resource-based theory in 1984 and referred to as one the strategic management theories. This theory is extensively cited especially owing to the fact that its applicability is relevant to present day management practices. The Resource-based Theory recommends that business organization will have a competitive edge over their rivalries and display improved financial performance by possessing, controlling, and applying essential and critical assets, which can either be physical and non physical in nature. Resource based theory is a tactical management model that contends that organizations will display greater performance while they are in possession of high quality enormouse resources at their disposal more than their counterparts [51]. Therefore, flowing from the resource based theory, we conclude that resources at the disposal of a business entity, influence their sustainability growth.

3.2. The Knowledge-Based View Theory

The Knowledge Based View Theory originated from the tactical management works and an extension of Resource based theory, which was initially popularized by Penrose in 1959 and subsequently extended by other scholars (Wernerfelt 1984, Barney 1991, Conner 1991). This knowledge is entrenched and conveyed via several ways, which include firm's ideology and uniqueness, policies, procedures, forms, structures, and workforces. The knowledge-based theory of an organization contemplates knowledge as the most strategically important resource possessed by the firm. The supporters of the theory contend that, because knowledge-based capitals are typically tough to replicate and generally multifaceted, unrelated knowledge and abilities among entities are the foremost factors that ensured continued economical advantage and firms' performance outcomes.

3.3. The Human Capital Theory

The theory of Human Capital was propounded by Gary S. Becker in 1964 and aims to integrate both its primary and ancillary impacts on firms' sustainability. The human capital theory advocates that persons with greater or superior human assets accomplish greater performance when implementing jobs. Human capital embraces the composition of information and talents that individuals possess. In specific term, human capital includes the distinctive intuitions, abilities, intellectual features and talents of entrepreneurs [57]. It also comprises accomplished qualities, accrued work and customs that may have a positive or negative impact on

performance. Human capital epitomizes a resource that is unrelated and diversly dispersed across persons and is therefore, fundamental to enhancing the performance and sustainability of a firm [58]. This present study viewed firms' performance as part of productivity. To the extent that human capital can be seen as an input resource, this study investigates the influence of human capital on the corporate sustainability growth of sampled listed consumer goods firms in Nigeria.

4. Methodology

The objective of this paper is to explore the statistical relationship between intellectual capital disclosures and Firm Sustainability Growth. In achieving the objective, ex-post facto research design was adopted in this study. To this end, secondary data were retrieved from the yearly financial reports of ten (10) listed Consumer Goods Firms for a period of 10 years (2011-2020). Samples of ten (10) companies were purposefully picked from the entire population of 21 (Twenty-one) listed companies on the Nigerian Exchange Group. To accomplish the aim of this study, three variables were identified and discussed in this section. These are: dependent variable which is denoted by corporate Sustainability Growth (CSG). Independent variable which are the components of intellectual capital Capital measures: Capital Employed Efficiency (CEE) Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Relational Capital Efficiency (RCE). The control variables are firm Size (FZ) and Leverage (LEV).

4.1. Variables Definition, Measurements and Justifications

Table 1. Measurement of Dependent Variable.

Variable	Meaning	Measurement	Justifications
Dependent Variables			
CSG	Corporate Sustainability Growth (Higgins & Van Horne's Model)	$\frac{ROE+b}{1-(ROE+b)}$ Where: ROE (Return on Equity) = $\frac{\text{Profit after Tax(PAT)}}{\text{Total Equity}}$ b. (Retention Ratio) = $\frac{\text{PAT} - \text{Current year Dividend}}{\text{PAT}}$	Higgins (1977), Mukherjee & Sen (2019), Van Horne & Wachowicz (2015), Ross et al. (2012), Xu & Wang (2018), Lassala, Apetrei, & Sapena (2017).

Table 2. Measurement of Independent Variables.

Independent Variables			
HCE	Human Capital Efficiency	Employees benefits (Wages and Salaries) divided by Value added	Chen, Cheng, & Hwang (2005), Amin & Aslam (2017), Tripathy, Gil-Alana, & Sahoo (2015), Liang, Huang, & Lin (2011), Nazari & Herremans (2007)
RCE	Relational Capital Efficiency	Advertising (Marketing and Selling) Expenses divided by Value added	Chen, Cheng, & Hwang (2005), Amin & Aslam (2017), Tripathy, Gil-Alana, & Sahoo (2015), Liang, Huang, & Lin (2011), Nazari & Herremans (2007)
SCE	Structural Capital Efficiency	structural capital (SC) of the firm divided by value added, SCE = SC/VA.	Chen, Cheng, & Hwang (2005), Amin & Aslam (2017), Tripathy, Gil-Alana, & Sahoo (2015), Liang, Huang, & Lin (2011), Nazari & Herremans (2007)
CEE	Capital Employed Efficiency	Capital Employed divided by value added Empirically, CEE = VA/CE	Xu & Wang (2018), Mukherjee & Sen (2019)
Control Variables			
FZ	Firms Size	The natural logarithm of total assets at the end of the year	Tutun et al, 2019, Jian and Wang, 2018, Castro et al, 2021
LEV	Leverage	Total debt divided by total Assets	Tutun et al, 2019, Jian and Wang, 2018, Castro et al, 2021

$$M\text{-VAIC} = CEE + HCE + RCE + SCE$$

4.2. Model Specification and Operationalization of Variables

$$Y = f(X)$$

$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \epsilon_i$$

Where:

Y= Dependent Variable: Corporate Sustainability Growth (CSG)

X = Independent Variable: Intellectual Capital (IC)

Z = Controlling Variables (CV)

CSG = f(IC)

Y = y₁

y₁ = Corporate Sustainability Growth (CSG)

X = x₁, x₂, x₃, x₄,

Z = z₁, z₂,

x₁ = Capital Employed Efficiency (CEE)

x₂ = Human Capital Efficiency (HCE)

x₃ = Structural Capital Efficiency (SCE)

x₄ = Relational Capital Efficiency (RCE)

z₁ = Firm Lev (LEV)

z₂ = Firm Size (FS)

$$CSG_{it} = \beta_0 + \beta_1 MVAIC_{it} + \beta_2 LEV_{i,t} + \beta_3 FS_{it} + \epsilon_{i,t} \quad (1)$$

$$CSG_{it} = \beta_0 + \beta_1 CEE_{it} + \beta_2 HCE_{it} + \beta_3 SCE_{it} + \beta_4 RCE_{it} + \beta_5 LEV_{it} + \beta_6 FS_{it} + \epsilon_{it} \quad (2)$$

where i = 1,... n and t = 1,... t represents the firm and year, respectively; β₀, β₁, β₂, β₃, β₄, β₅, β₆ are the assumed parameters; and ε signifies the dimension error term

Conceptual Model

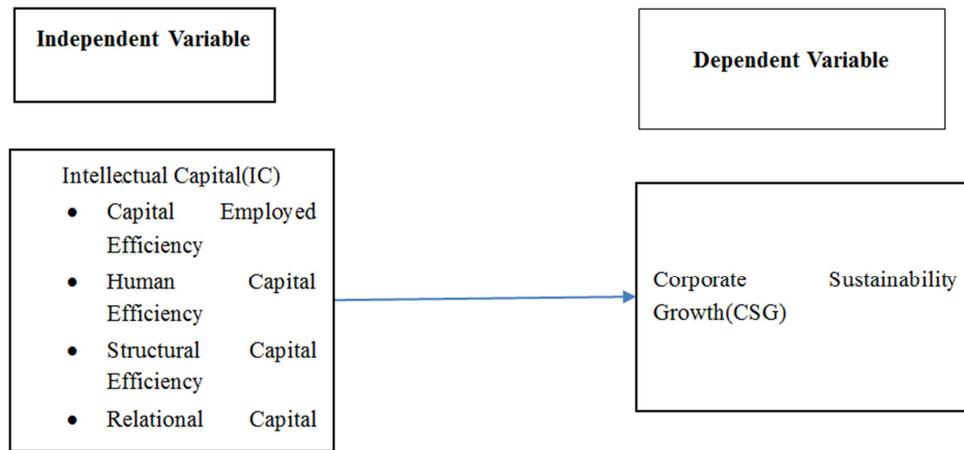


Figure 1. Author's Conceptual Model 2023.

5. Empirical Results

5.1. Descriptive Statistics

Table 3 shows the descriptive statistics of the selected proxies deployed in this study. The value of the mean for corporate sustainability growth (CSG) is 0.096, demonstrating that on an average, Nigeria Consumer goods firms relatively have high sustainability growth ability. The average value of M-VAIC is 11.456 with a highest figure of 103.599 and a lowest figure of -0.676. The negative M-VAIC value indicates that the funds invested in handling IC are relatively on a greater side than its influence in the process of organisation's value formation. The average value of RCE, i.e., 6.616 and HCE (7.756) are higher relative to other components of IC, which suggests that, among the IC constituents, RCE and HCE are the major drivers of business sustainability. It is imperative to know that among the IC mechanisms, the average value of CEE is at the minimum level, i.e., 0.462, which indicates that physical capital is not the major driving force of business sustainability in listed Consumer goods firms in Nigeria. The average value of

Leverage (LEV) is 1.803, which shows that the Nigerian Consumer goods are not highly geared in their capital structure. Similarly, the average value of FS is 18.290, which indicates that on an average, the Nigeria Consumer goods firms are resilience and matured companies.

Table 3. Descriptive Statistics of variable.

variables	MEAN	MAX	MIN	Standard Deviation
CSG	0.0943	0.9872	-0.3363	0.0214
VAIC	11.4563	103.5994	-0.6769	14.2662
CEE	0.4627	1.5746	-1.2828	0.3571
HCE	3.7563	9.8993	0.4058	2.088
SCE	0.6202	0.8989	-1.4637	0.3263
RCE	6.6169	94.566	0.3039	13.0038
LEV	1.8036	7.4035	0.4736	1.1822
SIZE	18.2903	19.9947	16.02193	1.01847

Source: Researcher's Work (2023)

5.2. Correlation Analysis

Table 4 indicates the correlation matrix of the association amongst the dependent variables and independent variables adopted in this paper. The association indicates that CSG has a positive connection with M-VAIC, CCE, HCE, SCE, and

FS. Though, CSG has an adverse relationship with LEV. Further to the above, the finding establishes that the association among all the independent variables is negligible,

i.e., less than 0.80. This is an indication that there is no problem of multi-collinearity amongst the independent variables used in the present paper.

Table 4. Correlation Matrix.

Variables	CSG	VAIC	CCE	HCE	SCE	RCE	LEV	SIZE
CSG	1							
VAIC	0.158	1						
CCE	0.337	0.012	1					
HCE	0.319	0.613	-0.597	1				
SCE	0.37	0.34	0.15	0.6319	1			
RCE	0.104	0.99	-0.008	0.498	0.2427	1		
LEV	-0.14	-0.13	0.373	-14054	0.0844	-0.167	1	
SIZE	0.105	0.239	-1E-04	0.1953	0.1536	0.2271	-0.08	1

Source Author's Computation (2023)

5.3. Regression Results from Estimated Model 1

Table 5 shows the outcomes from the regression of model 1 deployed in the study. The model shows that the co-efficient of M-VAIC has a favourable and significant influence ($\beta = 0.0191$; $P = 0.0242$), indicating that entities that have greater overall IC efficiency are more proficient to achieve sustainable growth. The result indicates that a unit rise in VAIC, will translate to 0.019 variation in firms sustainability growth. Therefore, this outcome is consistent with the discoveries of (Xu & Wang, Yu, Ng, Wong, Chu & Chan, Zhang, Nai-Ping & Yu-Sheng) [59, 62, 63]. From the regression result, Leverage (LEV) indicates a negative and insignificant association with corporate sustainability growth. From the result in model 1, a unit increase in debt, will lead to 0.0208 decrease in business sustainability growth of listed consumer goods in Nigeria. The Firm size shows a positive and insignificant association with corporate sustainability growth with with beta coefficient of a 0.0138 with a p-value of 0.5248. However, with the joint result of the model: (AdjR² = 0.12; F-Stat. = 1.63; p = 0.038), the study confirms hypothesis one and concludes that there is a statistical evidence that firms with superior IC have greater sustainability growth.

Table 5. Regression Results of Model 1.

$CSG_{it} = \beta_0 + \beta_1 MVAIC_{it} + \beta_2 LEV_{it} + \beta_3 FS_{it} + \epsilon_{i,t}$ -----Model (1)				
	Coefficients	Std Error	t. Stat	P-value
Intercept	-0.1427	0.3960	-0.3605	0.4192
MVAIC	0.0191	0.0015	1.6288	0.0242***
LEV	-0.0208	0.0182	-1.1401	0.2570
FS	0.0138	0.0216	0.6382	0.5248
Adj R-Squared	0.1288			
F-Stat	1.6308			
Prob (F-Stat)	0.0385			
Observations	100			

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ (Dependent Variable: CSG; Source: Researcher's Work (2023))

5.4. Regression Results from Estimated Model 2

The outcomes obtained from the regression analysis in

Table 6, shows that Capital Employed Efficiency (CEE), exhibits a significant positive effect on corporate sustainability growth with a P -value (0.0005). Therefore, this study accept hypothesis one and confirms that CEE has a significant influence in the attainment of sustainability growth by consumer goods companies in Nigeria. Therefore, this outcome is consistent with the results of (Xu & Wang, Wang, Basuki & Tutun Som) [59, 58, 61]. Further to the above, the findings indicate that CEE has a superior predictive power than other components as evidenced in its greater coefficient figure (0.2558). This indicates, in the Nigerian setting, that tangible capital is a major driving force in firms attaining sustainable growth. Similarly, Human Capital Efficiency (HCE) significantly influenced corporate sustainable growth with a P value of (0.003) and positive coefficient value 0.0305. This outcome is in tandem with the outcomes of (Xu & Wang) [59], who opined that human capital is a major contributing factor in firms attaining sustainable growth. The study, thus, confirm hypothesis three and concludes that Human Capital Efficiency (HCE) has a positive effect in firms realizing sustainable growth. The rationale for this argument is that the Consumer goods firms in Nigeria perhaps determine a balance between physical capital and human assets in the quest to achieve sustainable growth. The Structural Capital Efficiency (SCE) also displays a positive impact on business sustainable growth in Nigeria. The implication is that an effective administration of structural capital enables the company to be more proficient to accomplishing growth sustainability. This finding is consistent with the conclusions of (Basuki & Kusmawardhani, Tutun & Som, Xu & Wang) [10, 61, 59]. We therefore confirm hypothesis four and conclude that SCE has a significant impact on corporate sustainability growth in listed consumer firms in Nigeria. However, Relational Capital Efficiency (RCE) reveals an insignificant negative association with corporate sustainable growth, with a coefficient value of ($\beta = -0.0005$; P Value, 0.3449). This implies that an inefficient administration of expenditures relating to marketing and selling activities, makes firms not to attain sustainable growth. Therefore, we do not accept hypothesis five and conclude that RCE has no significant

positive association with corporate sustainability growth of consumer goods listed in Nigeria.

Flowing from the findings, apart from Relational capital, IC and its components –Human Capital, Physical Capital Human Capital and structural capital are the major driving force for corporate sustainable growth in Nigeria listed consumer goods. Again, it is pertinent to note that Adjusted R² value (0.2810) in Model 2 is greater when compared with the Adjusted R² value of Model 1 (0.1288), signifying that the separate mechanisms of IC contribute to a larger extent to corporate sustainable growth more than the overall IC. This

finding is similar with the results of (Xu & Wang) [59]. For the control variables used in the study, the two Models (1 and Model 2) show that the firm's size (FS) has a significant positive impact on growth sustainability of the business. This finding is in tandem with results of (Xu & Wang)[59], implying that the greater and ingenious corporations are, the higher the capability to accomplish sustainable growth more than the small and medium firms. Conversely, the study did not reveal any significant relationship of leverage (LEV) with corporate sustainable growth.

Table 6. Regression Results from Model 2.

$CSG_{it} = \beta_0 + \beta_1 CEE_{it} + \beta_2 HCE_{it} + \beta_3 SCE_{it} + \beta_4 RCE_{it} + \beta_5 LEV_{it} + \beta_6 FS_{it} + \epsilon_{it}$ ----- Model (2)				
	Coefficients	Std Error	t Stat	P-value
Constant	-0.2021	0.3385	-0.5969	0.5519
CCE	0.2558	0.0561	4.5568	0.0005***
HCE	0.0305	0.0101	3.0146	0.0032***
SCE	0.1445	0.0758	1.9063	0.0509***
RCE	-0.0015	0.0016	-0.9492	0.3449
LEV	-0.0537	0.0170	-3.1506	0.0021***
FS	0.0063	0.0185	0.3437	0.7317
Adj R-Squared	0.2810			
F- Stat	7.4492			
Prob (F-Stat)	0.000***			
Observation	100			

Note: * p < 0.1, ** p < 0.05, *** p < 0.01 (Dependent Variable: CSG: Source: Researcher's Work (2023))

6. Conclusion

The objective of the present study was to examine the effect of intellectual capital and its components on corporate sustainable growth in listed consumer goods in Nigeria. Further, this paper intended to determine the constituent of IC that has the most influence on the corporate sustainability growth in listed consumer goods in Nigeria. The results from the paper demonstrated that intellectual capital (IC) as proxied by M-VAIC model establishes a significant positive influence on corporate sustainable growth. Essentially, the findings also indicated that virtually all the independent variables - Physical Capital, Human Capital (HC), and Structural Capital (SC) – exert positive impact in explaining sustainable growth of the consumer goods companies. Conversely, the study could not found any significant relationship between the Relational Capital (RC) and corporate Sustainable Growth. Furthermore, the discoveries revealed that Physical Capital and also the Human Capital display strong positive influence on business sustainable growth. The findings from the study provide further insight that both Physical Capital, and overall IC components, play an important part in the corporate sustainability growth in the context of Nigeria listed Consumer goods firm. In addition, Physical Capital and Human Capital were discovered to be the major driving force of corporate sustainable growth in Nigeria. However, Relational Capital, amongst all the components

of IC, indicate a negative, but insignificant association with corporate sustainability growth in Nigeria. Placing the findings together, it can be concluded that IC and its components, undeniably, help in the attainment of business sustainability growth in Nigeria. This research work adds to the existing scholarly works on intellectual capital and corporate sustainable growth by providing further insights on the influence of intellectual capital and its mechanisms on corporate sustainable growth in Nigeria. Additionally, as established in the paper, IC and its mechanisms play essential roles in predicting corporate sustainable growth in the Nigeria context. Thus, corporate leaders would derive immense benefits from the present study in making a business case for their investment in intellectual capital resources. Furthermore, in this complex, dynamic and competitive business environment, coping with with corporate growth is a major challenge facing business managers, particularly in the emerging economies. To this end, this study offers Nigerian corporate managers the insights that effective deployment of IC resources and policies can lead to economic benefits both in the medium and in the future. The present study would provide a bases for future scholars, economists, policy makers, business managers as well as academicians. Further research can be extended by using other IC measures and corporate sustainability growth models. The dimension of the study in terms of the period, the size of the sample selected and other sector of the economy can be extended by future researchers.

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