

**THE IMPACT OF INTELLECTUAL CAPITAL ON THE FINANCIAL  
PERFORMANCE OF LISTED NIGERIAN FOOD PRODUCTS COMPANIES**

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PERFORMANCE OF LISTED NIGERIAN FOOD PRODUCTS COMPANIES

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of Science (International Accounting).



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## **ABSTRACT**

The main aim of this study is to examine the impact of intellectual capital (IC) on financial performance of listed Nigerian food products companies for five-year period i.e. 2010-2014 by adopting Pulic (1998) model of IC known as value added intellectual coefficient (VAIC). Regression models are used to test the hypotheses of the study where results of the study show that there is positive significant influence of IC on financial performance. Likewise, the results show that structural capital (SC) and capital employed (CE) influence the financial performance of Nigerian food products companies. Based on the resource-based theory, the results prove that companies can enhance financial performance by emphasising on IC especially in food products companies.

**Key words:** intellectual capital, VAIC, financial performance, Nigeria

## ABSTRAK

Tujuan utama kajian ini adalah untuk mengkaji kesan modal intelek ke atas prestasi kewangan syarikat produk makanan yang tersenarai di Nigeria untuk tempoh lima tahun iaitu 2010-2014 dengan menggunakan model modal intelek Pulic (1998) yang dikenali sebagai *value added intellectual coefficient (VAIC)*. Model regresi digunakan untuk menguji hipotesis kajian di mana hasil kajian menunjukkan terdapat pengaruh modal intelek yang signifikan positif ke atas prestasi kewangan. Begitu juga, hasil kajian menunjukkan bahawa struktur modal dan modal yang dilaburkan mempengaruhi prestasi kewangan syarikat produk makanan Nigeria. Berdasarkan teori asas sumber, hasil kajian membuktikan bahawa syarikat boleh meningkatkan prestasi kewangan dengan memberi penekanan ke atas modal intelek terutamanya dalam syarikat produk makanan.

**Kata kunci:** modal intelek, VAIC, produk makanan, Nigeria

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## **LIST OF ABBREVIATIONS**

CBN	Central Bank of Nigeria
CE	Capital Employed
HC	Human Capital
IC	Intellectual Capital
NBS	National Bureau of Statistics
NSE	Nigerian Stock Exchange
ROA	Return on Asset
SC	Structural Capital
VA	Value Added
VAIC	Value Added Intellectual Coefficient

## CHAPTER ONE

### INTRODUCTION

#### 1.0 `Background of the Study

The word “capital” has been in existence since the middle ages. It has been used by many famous economists, who always given it a special meaning in their theories. However, no layperson has any real trouble knowing basically what the word stand for. In every speech, capital and money are interchangeable (Hudson, 1993). Fathi, Farahmand & Khorasani (2013) opined that, in business language, capital denotes to any means that will deliver future cash flows. The most surely understood resource sorts are tangible in nature. Tangible capital refers to the touchable assets both financial and non-financial of the organizations.

Currently, intangible assets is another types of assets besides tangible. This includes the aptitudes of the workforce and its association, which are progressively getting to be important towards deciding future profits as economies of the world are transforming from manufacturing base towards knowledge-based economic activity. Drucker (1993) indicates that knowledge-based economic activity is the superior to land, labour and capital. Scholarly capital or known as intellectual capital (IC) is recognized as a strategic asset which gives competitive advantages by driving associations for superior performance in the current learning based economies (Kalkan, Bozkurt & Arman, 2014).

IC as defined by Bontis (1998) and Choudhury (2010) is the total knowledge that is surrounded in the personnel, organizational routines and network relationships of an

organization. It contains three components: human capital (HC) structural capital (SC) and capital employed (CE) (Mariya & Shakina, 2014). HC is the generic term for the competences, skills, trainings and motivation of the employees (Anuonye, 2015). Then SC comprises all the non-human storehouses of knowledge in organisations includes databases, organisational charts, process manuals, strategies, routines and anything that has a higher value than its material value to the company (Bontis, 2000) while CE comprises of all the financial and non-financial assets of the organization (Kamath, 2007).

The definition of IC has been introduced by Kalkan et al. (2014) to include knowledge, information and experience. Durham & Kennedy (1997) defined the IC as the relationship of the firm's market value and the book value. Pulic (1998) opined that IC includes three items: (i) human capital, which consists of knowledge, training and competence; (ii) structural capital which consists of the routines, procedures, systems, culture and database and (iii) capital employed which speaks to the value of the assets that add to an organization's capacity to create income furthermore known as operating assets. Pulic (1998) has introduced a model efficiency that monitors and measure the value creation known as value added intellectual coefficient (VAIC).

In Nigeria, research on IC and financial performance is skewed to other industries of the economy especially banks with little focus on the food product companies upon all its contribution to the Nigerian economy. For example, Honeywell Flour Mills Plc., a market leader in the Nigerian food industry, posted ₦1.4bn as profit before tax (PBT) and ₦1.1bn as profit after tax (PAT) where ₦3.14million goes to government account as tax for the financial year ended 31 March 2015 (Thisday, Sunday 27 September,



2015). Similarly, in 31 March 2015 Flour Mills of Nigeria Plc. (FMN) has posted a profit after tax (PAT) of N8.5 billion at a growth rate of 58% compared with N5.37 billion in 2014 respectively, where Nigerian economy received over ~~N~~3bn as revenue from only two out of twelve companies under food products sub-sector (Business Day, 14 September 2015). Hence, food products companies are very important to the Nigerian economy.

Food products companies is a sub-sector under consumer goods industry with market capitalization of ~~N~~244,493b (Nigerian stock exchange, 2013). Interestingly, foreign investors recently picked interest in food products companies in Nigeria where Kellogg Company, an American multinational food manufacturing organization headquartered in Battle Creek, Michigan, United States will invest \$450 million (~~N~~89, 659, 327, 003.63) (Thisday, 2015). Thus, at the end of 2015 market capitalization of food products companies in Nigeria will rise up to ~~N~~334, 152, 327, 003 .63 (\$1, 677, 109, 924.64). Thus, there is need for empirical studies on food product companies in Nigeria more particularly on IC due to the current knowledge based contribution in the economies.

There are 155 listed companies in NSE under 11 sectors. The sectors and number of companies are shown in table 1.1 as follows:

**Table 1.1***Sectors and Number of Listed Companies in NSE*

S/NO	SECTOR	NO. OF COMP.
1	AGRICULTURE	05
2	CONGLOMERATES	06
3	CONST. AND REAL ESTATE	09
4	CONSUMER GOODS	27
5	FINANCIAL SERVICES	28
6	HEALTH SECTOR	10
7	ICT	11
8	INDUSTRIAL GOODS	24
9	NATURAL RESOURCES	05
10	OIL AND GAS	10
11	SERVICES	20
	<b>TOTAL</b>	<b>155</b>

**Sources:** Nigerian Stock Exchange (2013)

Nigerian economy depends heavy on oil and gas industries over last four decades, by running a mono-product economy (Esu & Udonwa, 2015; Abogan, Akinola & Baruwa, 2014; Onodugo, Ikpe & Oluchukwu, 2013). It contributes more than 75.6% to Nigerian total revenue. According to quarterly report Central Bank of Nigeria (2012) mentioned that non-oil industries receipt, food products companies inclusive, stood at ₦589.98, billion (24.4% of the total revenue). National Bureau of Statistics (NBS) revealed in its annual report that the non-oil sector grew at 9.07%, in the fourth quarter of 2011, over than 8.93%, as documented in its fourth quarter of 2010. The development of the non-oil sector has been a major national goal (Sola & Joachim, 2014). Recently, in its effort to diversify the Nigerian economy from mono economy to diversified, via most active development finance institution (Bank of Industry), Nigeria's government will make ₦310 billion available for micro, small and medium enterprises (MSME) between 2015 and 2019 (Business Day, 25 May 2015).

In total there are 27 companies under consumer sector comprises of 4 sub-sectors with total market capitalization of ₦3.47 trillion (Nigerian Stock Exchange, 2013) (NSE,

2013) which includes breweries, food products, households and automobiles products.

The sub-sectors and the names of their companies are as follows:

**Table 1.2:**

*Consumer Goods Companies in NSE*

S/NO	COMPANY	TICKER	SUB-SECTOR
1	7UP BOTTLING COMPANY PLC	7UP	Beverages
2	CHAMPIOPN BREWERIES PLC	CHAMPION	Beverages
3	GOLDEN GUINEA BREWERIES PLC	GOLDBREW	Beverages
4	GUINNESS NIGERIA PLC	GUINNESS	Beverages
5	INTERNATIONAL BREWERIES PLC	INTBREW	Beverages
6	JOS INTERNATIONAL BREWERIES	JOSBREW	Beverages
7	NIGERIAN BREWERIES PLC	NB	Beverages
8	CADBURY NIFERIA PLC	CADBURY	Food products
9	DANGOTE SUGAR PLC	DANGSUGAR	Food products
10	DANGOTE FLOUR PLC	DANGFLOUR	Food products
11	FLOUR MILLS NIGERIA PLC	FLOURMILL	Food products
12	HONEYWELL FLOUR MILLS PLC	HONYFLOUR	Food products
13	BIG TREAT PLC	MCNTCHOLS	Food products
14	MULTI-TREX INTEG. FOODS PLC	MULTITREX	Food products
15	N. NIGERIA FLOUR MILLS PLC	NNFM	Food products
16	NATIONAL SALT COMPANY PLC	NASCON	Food products
17	NESTLE NIGERIA PLC	NESTLE	Food products
18	UTC NIGERIA PLC	UTC	Food products
19	UNION DICON SALT PLC	UNIONDICON	Food products
20	PS MANDRKDES AND CO. PLC	MANDRID	Food products
21	P Z CUSSIONS NIGERIA PLC	PZ	Personal/Household
22	NIGERIAN ENAMEL WARE	ENAMEL	Personal/Household
23	PREMIER BREWERIES PLC	PREMBREW	Personal/Household
24	UNILEVER NIGERIA PLC	UNILEVER	Personal/Household
25	VITA FORM PLC	VITAFORM	Personal/Household
26	VONO PRODUCTS PLC	VONO	Personal/Household
27	DN TYRE AND RUBBER PLC	DUNLOP	Automobiles

**Sources:** Nigerian Stock Exchange, (2013)

Nigerian government has attempted measures to motivate and enhance its investment atmosphere to make it more interesting to domestic and foreign capital ventures in other sectors of the Nigerian economy other than over relying on oil and gas sector.

For instance, Nigerian President Muhammadu Buhari in Paris confirmed the potential investors that his government's duties to enhance a righteous business environment for food processing and agricultural companies that would increase the business

accomplishments, reduce hunger and create jobs for the youth (The Guardian, 27 September 2015).

Additionally, Nigerian government for its effort to motivates food products companies it exempts all basic food items from value added tax (VAT) which is goods and services tax. Basic food items are the raw materials to the food products companies, whether or not it is packaged in order to encourage food products companies. Nigerian government also exempts all agro-chemical like fertilizer and water treatment chemicals from tax in order to encourage agricultural sector to provide food at a relatively cheap price to enable food products companies to get raw materials with low prices (Federal Inland Revenue Service, 1997).

By observing the emphasis on food products sector by the government, it is believed that food products firms also contribute to the competitive advantage and obtain reasonable economic growth via emphasising their activities to IC. This is because managing tangible assets only is not enough. In food products companies both physical capital and IC also very crucial towards the development of the company performance. Nevertheless, human capital shows a reasonable role in building a very strong competitive advantage of an organization.

Food products companies is important to the national economy. This is because, food is the basic necessity for all mankind, and food products companies contributes tremendously to economic development by increasing revenue and reducing the level of unemployment in Nigerian. For example, Nestle Company employed more than 3,300 employee in Nigeria. Cadbury Nigeria plc employed 2,300 personnel, Dangote

sugar plc employed over 50,000 personnel, while Honeywell flour PLC. as of 2011 has 757 employees (The Nation, 12 November 2012). Hence, there is need of an empirical evidence to determine the level of contribution given by IC towards the financial performance of such companies.

### **1.1 Problem Statements**

Double entry accounting system is the old-fashioned means of determining and valuing firm's productivity in the world which is mainly on physical assets (Ahangar, 2011). Thus, absence of IC from the beginning lead the double entry system undervalues the actual facts of the firms in their financial system. The new era of knowledge-based economy necessitates so many firms to develop a strategies for turning their activities into new knowledge based economy in order to suite with the new competitive environment (Namvar, Fathian, Gholamin & Akhavan, 2011; Bornemann, Knapp, Schneider & Sixl, 1999). Thus, the business environment are being change because that traditional business models are no longer acceptable in achieving their dynamic conditions of a changing world market and to have a useful information to their existing and potential investors (Okpala & Chidi, 2010). Therefore, study to examine the effect of IC components on firms' profitability is necessary. In the olden day's firm's performance are only measured via three basic factors of productions that is labour, land and physical capital. Tremendous contribution of management in this modern time increase with hundred percent in profitability and productivity by moving from labour intensive into technological and mechanical economy (Chen, Cheng & Hwang, 2005), (Huang & Wu, 2010). Presently, knowledge is greater than land, labour and physical capital (Makki & Lodhi, 2008) and (Amin, Aslam & Muhammad, 2014).

In this modern world of economy, the power of globalization has come into existence so speedily due to the fact that information and communication technology (ICT) and knowledge become the most precious assets of the firms. Transformation into modern world of technology has necessitates for the urgent need to look and find out intellectual means in a company's financial reports (Salman, Tayib, Mansor & Babatunde, 2012). Therefore, IC has been recognized as the bedrock for achievement of organizational goals (Pulic, 1998).

An extensive recognition of IC as a medium of competitive advantage resulted in the new strategies of monitoring the activities need in the company to achieve a maximum productivity from IC (Salman et al., 2012; Maditinos, Chatzoudes, Tsairidis & Theriou, 2011; Makki & Lodhi, 2008). Hence, old-fashioned accounting and measurement systems seem to be inappropriate and imbalanced in the new economic world where competitive advantage is driven by ICT and IC. This is because, old-fashioned accounting does not reflect the true picture about the company and may mislead investors and other relevant stakeholders to make appropriate choices when making economic decisions (Brooking, 1996). Due to the knowledge-based economy, all companies around the world depend heavily on IC to achieve a concept of going concern and increase their productivity (Ahangar, 2011).

In Nigeria, food products companies is the third sub-sector in consumer goods industry after beverages brewers/distillers and household. Food products firm is a sub-sector under consumer goods industry with market capitalization of ₦244, 493 Billion, (Nigerian Stock Exchange, 2013). Additionally, consumer goods is also the third largest industry in Nigeria after financial sectors and industrial goods, with total

market capitalization of N2, 001 Trillion. Despite the strategic importance of the industry to the Nigerian economy, not much attention is given in term of research to this crucial area.

Prior studies on food products companies in other areas other than IC are many, for example Broring & Cloutier (2008) analyse value-creation in the functional foods and nutraceutical industry in Canada. Likewise, the study of Nezakati, Ali, Mansori & Hui (2011) examine the Market Value Coverage in Fast Food products Industries. In Nigeria, Ademola & Kemisola (2014) studied the effect of working capital management on market value of quoted food products and beverages manufacturing companies. However, the study related to IC in food products companies is limited

Therefore, this study attempt to fill the above lacunas which aims at examining the impact of IC components on financial performance of listed Nigerian food products companies ranging from the 2010 – 2014 periods by using VAIC model.

It is also pertinent to carry out an empirical study to examine IC components to test any effect of IC components on financial performance of food products firms in Nigeria. This is because, it will stimulates the food products companies in Nigeria to be ready and able to face the new challenges that posed by ICT, liberalization and globalization that represented in the increasing entering of foreign food products companies.

## **1.2 Research Questions**

This study replies the incoming inquiries as follows:

1. Does IC influence the financial performance of Nigerian food products companies?
2. Does the structural capital influence financial performance of listed Nigerian food products companies?
3. Does the employed capital influence financial performance of listed Nigerian food products companies?

## **1.3 Research Objectives**

Specifically, the objectives of the study are:

1. To examine the influence of IC on the financial performance of Nigerian food products companies
2. To examine the influence of structural capital on financial performance of listed Nigerian food products companies.
3. To examine the influence of capital employed on financial performance of listed Nigerian food products companies

## **1.4 Significance of the Study**

From onset, this study builds researcher's understanding about the relationship between a developed measure of IC – namely the VAIC and the financial performance of listed Nigerian food products companies. Second, it recognizes IC variables, which impact the financial performance and company's profitability via return on assets (ROA) measurement. Particularly, the significance or benefit of this study gathers to



both financial specialists (creditors and investors), existing and potential investors, policy makers and academics. Third, this is an up to date investigation of the few studies that have an elaboration on the impact of IC components and financial performance of listed food products companies in the economies.

For the financial specialists, this study enhances their knowledge on which IC components influences firm financial performance most. For the researchers, it will expand the understanding of the research field there by giving extra confirmation on IC components and firm financial performance. For the existing and potential shareholders, the study will serve them as a channel to make choices in their economic advices. The study also will serve as a road map for policy making on IC in food products companies. The need of this study originates from the essential to raise and enhance the firm financial performance through knowing of the IC components to effect on the firm financial performance.

### **1.5 Scope of the Study**

This research is specifically designed to cover all the listed Nigerian food products companies. The time frame covers by the study is 2010 – 2014. This was perceived necessary in order to study the impact of IC components on financial performance of listed Nigerian food products companies. The study will be limited only on ROA in measuring the financial performance of the listed Nigerian food products companies. ROA is a measure of asset-used efficiency. The ROA is employed because it identifies the effectiveness of companies in managing the resources.

Additionally, higher ROA shows the effective utilization of companies' assets in protecting economic interests of shareholders, Boujelbene & Affes (2013) opined that ROA generates a means for examining the general competence with which firm assets are used to yield net income from operations. Klapper & Love (2002) claimed that ROA measures the operating and financial performance.

### **1.6 Summary**

This chapter traces the background of the study and specifies the problem statements. Moreover, it exhibits research questions, objectives of the research, and significance of the study. The scope of the study together with organization of the thesis are also deliberated. The next chapter deliberates the related literatures of the study.

### **1.7 Organization of the Thesis**

This thesis is divided into five chapters. Chapter one covers background of the study, problems statements, research questions, objectives of the research, significance of the study, scope of the research and finally organization of the study, the next chapter is Chapter 2, it reviews the relevant literature to the study. Chapter 3 discusses methodology that the study follows, which includes theoretical framework, development of hypotheses and specification of model, followed by data collection and measurement of variables. Chapter 4 revealed the outcome of the data analysis. Finally, chapter 5 presents the discussions of the findings and conclusions, implications, limitations of the study as well as recommendations and directions for future research.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter discusses the literatures that are relevant to affiliation between IC and financial performance. The first part of this chapter highlights IC concept development. The literature in the second part is organized based on the variables of the research. ROA stands as financial measurement of firm performance which is the dependent variable while independent variables includes VAIC, structural capital (SC) and capital employed (CE).

#### **2.1 Concept of Firm Performance**

Performance of firm can be described as a performance that is measureable and provides useful information on the condition of the company or the level of attainment of organizations goals from the ratio of measurements desired. Performance of firm can be measured via diverse tools, both financial and non-financial aspect. Traditionally, many measures have been based around financial aspects, omitting important non-financial aspects including the importance of dynamic capability through accumulated research and development over time, to enhance firm performance (Kamal, Mat, Rahim, Husin & Ismail, 2011).

The reason for assessing the performance is to stimulate and motivate the personnel and help the system of the company to achieve the organisational target and abiding the standard set upon, in order to achieve actions and results that desired by the organisation. Assessing the performance of the company is also carried out to avoid

any actions that disrupt and upset the performance and to motivate and stimulate the right and desired actions by providing rewards to those abiding the right manner by providing it extrinsically or intrinsically (Lina et al., 2014). Company exists as a team or an organisation hence, it has a goal of performance to achieve together with its members. As the market is getting saturated with globalisation nowadays, company has to enhance their competitive advantage and differentiate from their core competitors. Therefore, the standard level of performance can be measured in various ways in order to know whether the standard level of performance has been achieved. Consequently, Richard et al (2009) observed that, company performance comprises three specialised areas of company's outcome:

- a) Financial (profits, return on assets, return on investments);
- b) Market performance (sales, market share); and
- c) Shareholders return (total shareholder return, economic value added),

Therefore, in this study the performance will be measured via financial aspect using the ratio of return on assets (ROA).

## **2.2 The Concept of Intellectual Capital**

Many scholars are in the consensus that there is no agreed definition of IC (Engstrom, Westnes & Westnes & Furdal, 2003). Gerpott, Thomas & Hoffmann (2008) opined that, universally acceptable definition of IC appears have not been realised yet.

However, Kalkan et al. (2014) published on "IC" and wrote, "IC is the intellectual material - knowledge, information, intellectual property, experience - that can create wealth in an organization." Later Kalkan et al. (2014) lengthened the definition of IC by adding that the concept stand as a capital assets of IC of the business.

Roos & Roos (1997) viewed IC as “the sum of the knowledge of its members and the practical translation of this knowledge into brands, trademarks, and processes”. Durham & Kennedy (1997) describe it as “the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills that provide a company with a competitive edge in the market”. IC is intellectual material-knowledge, information, intellectual property, experience that can be used and utilised to create wealth in the company (Hudson, 1993).

Berry (2004) opined that IC is nothing but goods/assets without physical existence but has an economic value. Luthy (2008) also defined ‘IC’ as uses to encase the greater part of the non-unmistakable resources and assets of an association, and its practices, licenses and implicit knowledge of its individuals and their system of accomplices and contracts. Brooking (1996) characterizes IC as an amalgamated resources which enable the company to capacity and see a venture as the aggregate of its substantial resources and impalpable resources as expressed in the accompanying equation:

$$\text{Enterprise} = \text{Tangible Assets} + \text{Intellectual Capital.}$$

IC in the millennium means that less people will do physical work and more people will do brain work (Akpinar & Akdemir, 2002). It always disappears on the organization monetary record yet it has more esteem for associations than physical resources. Financial wealth is driven more by learning and data than the production process. Thus, IC is a major contributor to a firm’s earnings (Anuonye, 2015).

Brooking (1996) spelt out four categories of IC assets as components of IC. These categories are as follows:

1. Market assets
2. Intellectual property assets
3. Human-centred assets
4. Infrastructure assets

Market assets (MA) includes customers and their loyalty, chain of distribution contracts and other agreements that serve as the potential that the organization possess due to market-related intangible. Intellectual property assets (IP) includes technical know-how, copy right patent registered number of the company and other numerous design rights. Then human-centred assets (HCA) includes leadership design, business strategies creative, quick problem solving, entrepreneurial and management style embodied by the employees towards the attainment of the organization goals. Infrastructural assets (IA) or known as structural capital, is an assets that includes all those technologies, communication style, organizational chart, methodologies and other means which enable the organization to function effectively and efficiently.

Finally, IC is also believed as the total knowledge that is surrounded in the personnel, organizational routines and network relationships of an organization (Bontis, 1998a; Choudhury, 2010).

### **2.3 Structural Capital**

Structural capital involves the enabling structures that allow the organization to exploit the IC (Muhammad & Ismail, 2009). Structural capital involves trademarks, patents, formulas, management style, company reputation, image, corporate culture, networking, mission, vision and objectives of the organization (Anuonye, 2015). Ahangar (2011) states that it is the variance between non-thinking and thinking

resources that use diverse modes of management such as culture, organizational processes, technology, absorptive capacity and information systems to achieve corporate goals (Namvar et al., 2011). Thus, this form of VAIC component is of strategic position in the corporate planning and growth of any organization (Zin, Hassan & Ahmad, 2014).

Therefore, SC refers to the learning and knowledge enacted in day-to-day activities of the organization, includes but not limited to process of production, IT, customer relations and R&D (Lina, et al., 2014). Structural capital comprises all the non-human storehouses of knowledge in organisations includes databases, organisational charts, process manuals, strategies, routines and anything that has a higher value than its material value to the company (Bontis, 2000b). Structural capital (SC) is a difference between produced added value (VA) and human capital (HC), ( $ST = VA - HC$ ).

### **2.3 Capital Employed**

Capital Employed (CE) comprises of all the financial and non-financial of the organization (Kamath, 2007). As one of the component of VAIC, CE served as a pointer of value added efficiency of capital employed (Firer and Williams, 2003). CE is determined by dividing value added with capital employed (VA/CE). This ratio contributes to every unit of capital employed and to the value added in the organization (Kamath, 2007).

For the purpose of this study, the term IC can be described as “the possession of knowledge, physical and financial resources, applied experience, organisational

technology, customer relationships and professional skills that provide food products companies with a competitive edge in the market”.

## **2.6 Review of Related Empirical Studies**

Professor Inman is the first person that used IC at Western Ontario University in 1956 (Hudson, 1993). IC stands as knowledge resources that organization used to attain its goals. Therefore, the success or otherwise of the organization depends on creating, discovering, capturing, disseminating and measuring knowledge. In other word, if organizations increases the productivity of their organizational learning. Hence, learning is an ongoing, never-ending and always changing process base on the changing of the market. It is the foundation of adaptability and innovation and in the last two and half decades, the importance of IC has been improved tremendously specifically in developing and developed countries (Salman & Dandago, 2013). Fathi et al. (2013) maintain that IC in the millennium as fewer people will do physical work and more people will do intelligence work.

Garcia-Ayuso (2003) taken together the research efforts led in the course of recent decades gave convincing evidence that:

- IC are fundamental sources of competitive advantages that must be recognized, measured and controlled keeping in mind the end goal to guarantee the proficient management of corporation.
- There is a consistent relationship between most IC investments and subsequent earnings and worth creation in business enterprise



- IC are nowadays the principle drivers of growth and competitiveness in our social orders and their measurement is essential for the configuration and implementation of public policies

Prior literature have used VAIC in order to evaluate the relationship between IC and firm performance. For example, Berzkalne & Zelgalve, (2013) examine the influence of IC on company performance, where the mixed result were detected.

Almost all the prior studies on IC over last two decades for example, (Anuonye, 2015; Lina, 2014; Sledzik, 2013; Kamal, Mat, Rahim, Husin & Ismail, 2011) are mostly concentrated on banking and financial sectors and neglect other sectors, food product companies inclusive. Still they do not reach any agreement on the role of firm's performance. This is because of the inconsistent results in studies conducted in different countries. It is clear from the literature that, IC is an asset of the organization and an increase in IC ought to increase the worth and profitability of the organization also. The mixed and inconclusive results in the subject of IC and its impact on firms performance is topical and requires more research especially in food products companies due to scarce empirical studies on this sector.

It is noted that, companies in Nigeria, still used traditional accounting models in the measurement and reporting systems, this is because, most of the reported IC drivers are expressed in narrative and qualitative instead of in quantitative or fiscal terms with this style, financial performance will never be measured and report genuinely to concern parties ( Salman & Dandago, 2013).

VAIC was developed by Pulic (1998), which monitors and measures the value creation efficiency in the company according to accounting-based figures. The VAIC model is intended to measure the extent to which a company produces added value based on intellectual (capital) resources (Stahle, Stahle & Aho, 2011). A simple computations of VAIC model is as follows:

- Human capital (HC) is interpreted as employee expenses and HC is calculated by dividing added value (VA) with HC:  $HC = VA/HC$
- Structural capital (SC) is the difference between produced VA and HC or VA-HC is calculated by dividing SC with VA:  $VA-HC/VA$
- Capital employed (CE) is interpreted as financial capital and is calculated by dividing VA with CE:  $VA/CE$

Therefore,  $VAIC = \frac{VA}{HC} + \frac{VA-HC}{VA} + \frac{VA}{CE} = HC + SC + CE$

It has been revealed that a significant number of the association between IC and firm performance are conducted via VAIC. Among these studies includes the study of Fathi et al. (2013) where the relationship between IC and financial performance in Tehran Stock Exchange for the period of ten years are examined. The study found mixed associations between IC components and firm performance where there is significant positive relationship between SC with return on assets (ROA), return on equity (ROE), and growth revenues (GR). Similarly, the study found a significant positive relationship between HC, CE with ROA and ROE, but no significant relationship between HC, CE with GR.

In the same vein, Berzkalne & Zelgalve (2014) examine the impact of IC on company value for three different countries which includes Estonia, Latvia and Lithuania by using Tobin's Q method from the period of 2005–2011. The results are mixed regarding relationship between VAIC and company value for the three countries. This is because the results show that there is positive relationship between CE, HC with company value in Latvia and Lithuania while no significant relationship between SC and company value in the two countries. In the case of Estonia, there is no significant correlation between VAIC, its components and company value. Also, Abdulsalam et al. (2011) measure the IC efficiency of the Kuwaiti Banks (commercial and non-commercial) from the periods of 1997- 2006, where valued added stands as dependent variables while CE and HC are independent variables. The result showed a mixed relationship between IC components and performance of Kuwaiti Banks. The results showed a significant relationship between VA and CE while a negative relationship between VA and HC.

Additionally, Lina (2014) in her study associates the IC components towards the company performance, where the listed companies in Indonesian Stock Exchange were examined between the periods of 2009-2011. Result showed that HC and SC has no influence towards company performance while CE has a significant a relationship with company performance. Thus the study found mixed result too. However, the study of Mehri, Umar, Saeidi, Hekmat & Naslmosavi (2013) on the relationship between IC and financial performance industries in Malaysia, reported a positive significant relationship. In the same vein, the study of Dadashinasab & Sofian (2014) investigate the effect of IC on high IC firm financial performance with moderating role of dynamic capability for the periods of 2000 to 2011. The study proved that there is

positive and significant relationship between HC, SC and CE with firm financial performance. Additionally, in Pakistan, Amin et al. (2014) associates IC and financial performance of pharmaceutical firms, the results of the study shows significant positive impact of IC on financial performance.

Conversely, Salman et al. (2012) examine the influence of IC components on financial performance of Nigerian manufacturing sector and found a positive result between IC and ROA as financial performance.

Similarly, Khan, Khan & Khan (2012) studied the impact of intellectual capital on financial performance of banks in Pakistan, the results show that intellectual capital has significant effect on the financial performance of banks. In line with Khan et al. (2012), Tseng & Goo (2005) examine the IC and corporate value of Taiwanese manufacturing firms. The outcome of the study shows a positive relationship between IC and corporate value. Similarly, the study of Maditinos et al. (2011) and Laing, Dunn & Hughes-Lucas (2010) in Athens and Australia on empirical relation of IC efficiency based on HC efficiency shown a significant and positive relation with financial performance. A study by Al-Shubiri (2013) on the impact of value added intellectual coefficient components on financial health in Jordanian industrial sector from 2005-2011 indicates a significant impact of human, employed element and IC as a whole on financial health as productivity and profitability.

Unlike the study of Najibullah (2005) that investigates the value creation efficiency of IC with market valuation and financial performance of 22 Bangladesh Banks listed on Dhaka Stock Exchange, the result proved mixed. This is because, on market valuation

where Market to book value (M/B) serves as dependent variables, results shows that VAIC is significantly related with M/B.

In the same vein, HC and CE are significantly related with M/B. But SC is not significantly related with M/B. For dependent variable financial performance, which considers ROE, ROA, GR, and EP found in the correlation analysis, value VAIC is not significantly related with the dependent variables of financial performance except GR while HC, CE and SC on the financial performance of the banks, it shows that CE is significantly related with ROE and ROA. The other two components (HC & SC) are found not to be significantly related with ROE and ROA.

However, HC is found to be significantly related with GR, and SC is found to be significantly related with EP. Similarly, Yusuf (2013) conducted an empirical research on the association between HC and financial performance in Nigerian banks. The study found that efficient utilization of HC does not have any significant impact on the ROE of banks. Likewise, the study of Djamil, Razafindrambinina & Tandean (2013) relates IC with firm's stock return of listed companies in Indonesia, the results still reveal that IC does not affect the current stock return but it however, contributes to stock growth.

Firer & Williams (2003) revealed absences of relationship among IC and financial performance in South African companies. But Makki & Lodhi (2008) revealed the presence of positive relationship among IC and firms' productivity. Again, Chen et al. (2005) in Taiwan determined positive impact on market value and financial performance.

Unlike the study by Musibah & Alfattani (2013) that examined and ascertain the effects of IC on corporate social responsibility (CSR) for Islamic Banks sector for the period of five years, 2007-2011, their results showed negative influence of IC on CSR of Islamic Banks. Additionally, Sledzik (2013) investigated the influence of IC performance of Polish banks through the application of VAIC model where 20 banks were observed from 2005 to 2009. The study, due to the financial crisis, observed a significant decrease of the VAIC ratio in the banking sector in Polish.

Al-Musali & Ismail (2014) examined the impact of IC on financial performance during 2008 to 2010 of listed banks in Saudi Arabia via VAIC model, the results showed a positive association between IC and performance of Saudi banks. Additionally, Anuonye (2015) determined the impact of IC on quoted insurance companies in Nigeria by using earnings per share model (EPS). The study concluded that IC has a positive association with EPS.

Arslan & Zaman (2014) determined the relationship between IC firms' financial returns of oil sector in Pakistan from 2007 to 2011 and found positive relationship between IC components and ROI, ROE and EPS as financial performance. Equally, Rehman, Rehman, Usman & Asghar (2012) determined IC with corporate performance of Pakistan banking sector where the results showed a positive associations. Similarly, Deep & Narwal (2014) analyses IC with financial performance of Indian textile for 10 years ranging from 2002 to 2012. The result showed a positive association between IC and financial performance. In the same vein, recently, Bharathi (2015) finds a positive association between IC and market value of Indian firms from 2008 to 2013.

Despite, there are numbers of empirical studies conducted in the area of IC around the world over the past two decades, in various industries across the economies, however, the agreements are yet to reach on the significance of IC on firm's performance. This is because of the diverse and inconsistent evidences in studies carried out from different economies. In addition, it is seen from the literature that IC is an asset of the company and an increase in IC should increase the value of the company as well. The mix and inconclusive results in the subject of IC and its impact on firms performance therefore, is topical and requires more research.

## **2.7 Summary**

As mentioned earlier, Pulic (1998) proposed VAIC as the measurement model of IC. The VAIC is an analytical procedure proposed to allow management, shareholders and other stakeholders to monitor value added of companies efficiently and effectively. The VAIC method was mainly proposed to measure the financial performance of a company via three components of IC namely human capital, structural capital and capital employed.

Relevant literature are discussed in this chapter. Many prior studies are reviewed concerning the relationship between IC and firm performance in different sectors of different countries around the world via VAIC model. Most of the prior research shows mix and inclusive results related to IC and firm performance.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This study adopts ex-post facto research design. Ex post facto (“after the fact”) provides an alternative way in which a study can examine the extent to which specific independent variables may possibly affect the dependent variable of the study (Leedy & Ormrod, 2010) This chapter explains the theoretical framework and hypothesis development. It then followed by the clarification of the research approach. Finally, this chapter concludes with model specification and tools for the data analysis.

#### **3.1 Theoretical Framework**

A theoretical framework stands as the believe of the researcher on how certain phenomena (variables or concepts) are associated with each other (a model) and an explanation of why and how the researcher believe that these variables are related with each other (theory). Therefore, both the model and the theory flow logically from the documentation of priors studies in the problem area of study (Sekaran & Roger Bougie, 2013). Thus, one component of reviewing the writing is to determine what theories may be utilized to explore the questions in an academic study (Abbott and Jennifer, 2013). A theory is "a systematic set of relationships providing a consistence and comprehensive explanation of phenomena (Hair, 2006).

Scientific research is based on a theoretical framework. A researcher should, therefore, be able to identify theories that are relevant to his/her study and try to ground the proposed research into one or more of the theories.



### **3.1.2 Resource-Based Theory**

The conceptual model of the current study deals with the importance of owning specific resources lies upon the resource based view theory (RBV). Historically, Wernerfelt was the scholar who initially used the term RBV in the year 1984 (Rauf, 2007). A few years later, Barney, (1991) extended the theory categorizing resources into three groups, namely human capital, physical capital and organizational capital. These resources are heterogeneous, unique, rare and non-tradability amongst firms; and have influence on firm performance. He added that the more innovative of a new product, the higher the product varies from the competitors, thus the better the performance of the firm.

The strategic management discipline has moved recently from a "market-based" to a "resource-based" view of competition. The former view sees operations as a perfectly adjustable system focused to successfully follow the rules dictated by markets, while the latter suggests that it is more profitable to focus on developing, protecting, and leveraging a firm's unique operational resources and advantages in order to change the rules of competition (Gagnon, 1999).

Rauf (2007) defined firm's resources "as tangible and intangible assets which are tied semi permanently to the firm such as brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc". He also focuses on the performance element as he argues that one can identify specific type of resources leading to high profits. The RBV attempts to describe, explain and predict how companies can achieve a sustainable competitive advantage by acquiring and controlling valuable, rare, inimitable and non-substitutable

resources (Barney, 1991). Resources can be tangible (e.g. equipment) or intangible (e.g. process knowledge) assets that are key inputs of the production and delivery of products and services (Xu, Huo, & Sun, 2014). RBV emphasized on the role of intangible resources and organizational capabilities which include analysing intellectual capital in generating a firm's sustainable competitive advantages (Noordin, 2014).

RBV views the IC as strategic resources. This is because, firms gain competitive advantage and superior performance through the acquisition, holding and efficient use of these strategic resources. More recently, the IC-based theory developed by Reed, Lubatkin and Srinivasan (2006) has been advanced as one specific aspect of resource-based theory (Almusali, 2009).

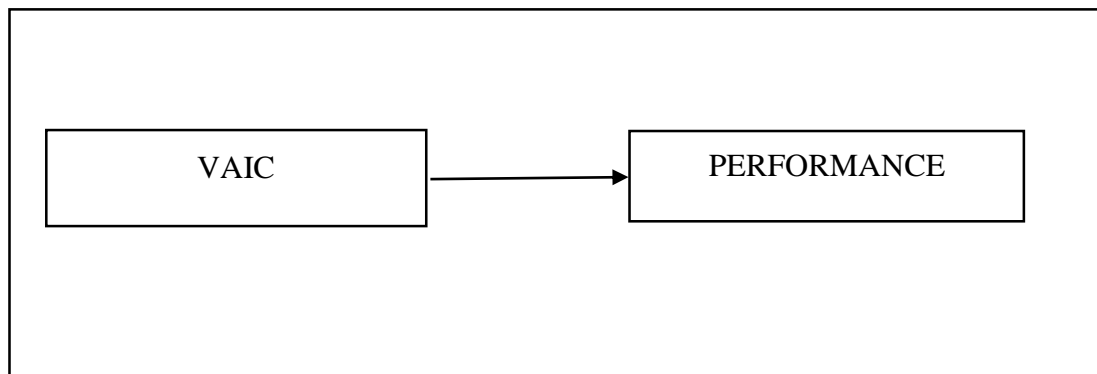
Considering the importance of resource-based theory in assessing the importance of IC, this study intends to use this theory to explain the relationship between IC and financial performance. The resource-based theory is a powerful tool and provides important insights in examining the impact of IC on firm performance (Warnier, Weppe, & Lecocq, 2013). The advocates of resource-based paradigm consider IC to be a strategic asset, because IC has the potentiality of linking its components (resources) with company's performance (Salman, 2014; Barney, 1991). Due to the influential power of these resources, firms will be able to compete, survive and perform. Accepting this view, the study focuses on analysing the firm specific resource, namely intellectual capital and its components in determining firm Performance. There are many studies that used resources based theory on determining

the impact of IC and firm performance, for example (Almusali, 2009; Noordin, 2014; Salmat, 2014).

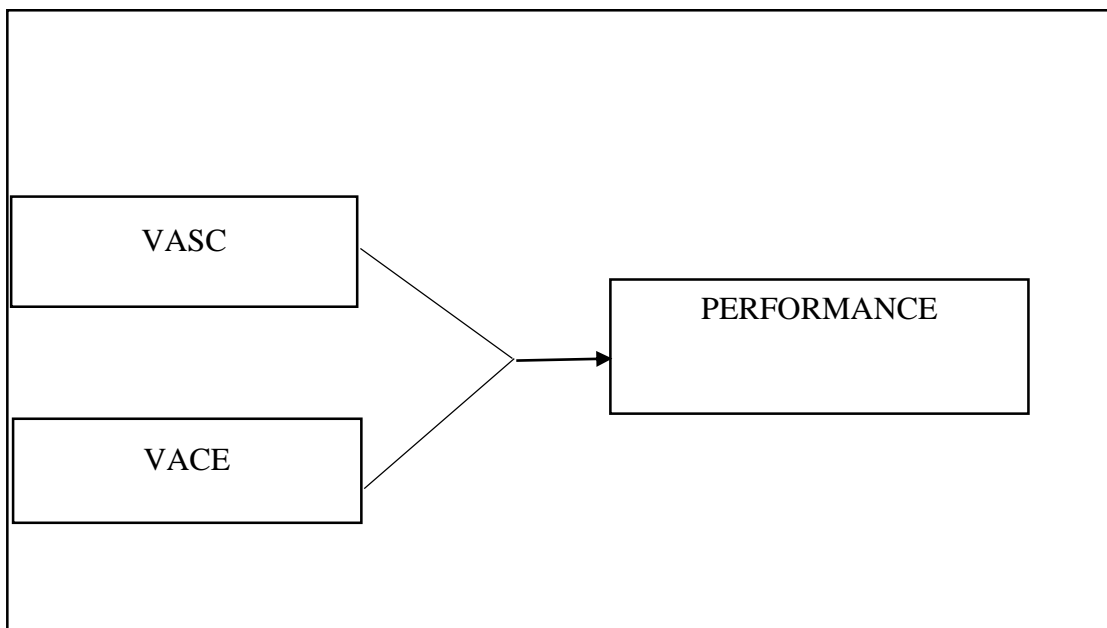
### 3.1.3 Research Framework

Based on the above discussions, the resources based theory provides the underlying predictions and justifications towards the aim of this study in investigating the relationship between IC and financial performance in Nigeria. Thus, the research framework for this study is as shown below:

Model 1



Model 2



**Source:** Adopted from Pulic (1998)

The frameworks of the study are design to examine the impact of IC on financial performance of Nigerian food products companies by using two models. Model one of the study is design to examine the influence of IC on the financial performance of Nigerian food products companies by using VAIC that comprises HC, SC and CE. This is in line with the study of Zeghal & Maaloul (2010) that carried out the study on UK companies by using VAIC. Large number of researchers such as (Chen et al., 2005; Kujansivu & Lonnqvist, 2007; Kamath, 2007; Chan, 2009) adopted the VAIC method which remains, in their view, the most attractive among the suggested methods to measure IC.

Likewise the second model that includes VASC and VACE is also aimed to examine their influence on financial performance of listed Nigerian food products companies respectively. This is in line with the study of Aramburu, Saenz & Blanco (2014) that examine the structural capital on firm performance and its innovation capacity in Columbian companies, while Zeghal & Maaloul (2010) examined the impact of capital employed on financial performance of UK companies.

Based on the current knowledge-based economy, the study aimed to use SC and CE as show in the framework of model two to examine the impact of IC on companies' performance. Presently, knowledge is greater than land, labour and physical capital (Makki & Lodhi, 2008) and (Amin, Aslam & Muhammad, 2014). Therefore, study exclude HC because prior studies like Salman et al (2013); Okwy & Chritopher (2010) and Pulic (1998) provides that human capital is a pillar upon which all other resources of an organization rest on. Thus, the study aimed to examine the impact of SC and CE on the financial performance of companies without HC which prior studies proved that

it is the pillar of all other resources of the organization. Therefore, the study aimed to examine the influence of other two components of IC (SC and CE) on financial performance of food products companies of Nigeria. This is consistent with the study of Aramburu, Saenz & Blanco (2014) and Zeghal & Maaloul (2010) that examined the impact of SC and CE on financial performance in UK and Columbian companies respectively.

## **3.2 Hypothesis Development**

### **3.2.1 Intellectual Capital and Financial Performance**

Financial performance in relation to IC connotes notable actions or achievements which accrue to an enterprise as a result of IC measurement and application (Anuonye, 2015). The traditional monetary bookkeeping is unable to look at the real value of the firm where it only measure physical assets (Lina et al. 2014). Prior studies keep up that IC makes value for the organization (Fathi et al. 2013). For instance, the investigation of Gan and Saleh (2008) examined the relationship in the middle of IC and firm execution and they found that IC significantly affects profitability and productivity of the firm.

In the same vein, the study of Al-Musali & Ismail (2014) proved an IC and its consequence on financial performance of Saudi Arabian banks where they revealed that IC is positively connected with banks' financial performance. Additionally, Chen et al. (2005) found that IC has a significant influence on profitability. Therefore, based on the findings of the previous studies, it is hypothesized that:

**H<sub>1</sub>**: Intellectual capital influences the companies' financial performance.

### **3.2.2 Structural Capital**

Bontis (2000b) conducted a study on IC and business performance and revealed that IC has a positive association with business execution regardless of industry. Maditinos, Sevice & Tsairidi (2009), carried out another study to confirm findings of Bontis (2000b) the findings revealed a positive relationship of structural capital and firm performance. In his study, Appuhami (2007) found a positive relation between structural capital and firm performance. Hence, in the light of the above findings, the following hypothesis is derived:

**H<sub>2</sub>:** Structural capital influences the companies' financial performance

### **3.2.3 Capital Employed**

Capital utilized is regarded as the strongest predictor of execution (Choudhury, 2010). Accordingly, Lina et al. (2014) opined that a strong linkage between capital utilized backings that information tied up in relationship among representatives, customers, suppliers, cooperation accomplices and so forth tends to prompt process and create developments, better critical thinking which tends to increase generation and administration conveyance effectiveness and in addition customer satisfaction

Appuhami & Bhuyan (2015) also establish a positive relationship between capital employed and capital gains on shares of listed companies in Thailand stock market. Also, Khalique, Shaari & Isa (2011) conducted a research on the relationship of IC with the organisational performance of commercial banks in Islamabad, Pakistan, the results showed that relational capital (or capital employed) has positive relationship with organisational performance. Though many studies found the relationship between capital employed and business performance but still the result is mix and inconclusive,

this component of IC still make up a reasonable linkage with business performance.

Thus, the hypothesis related to capital employed is formulated as follows:

**H<sub>3</sub>:** Capital Employed influences the companies' financial performance.

### 3.3 Research Design

In order to achieve the objective of the current study, the inferential approaches are utilized between IC and its components (structural capital and capital employed), and VAIC as independent variables and firm financial performance (ROA) as dependent variable.

#### 3.3.1 Population of Interest

The population of the current study comprises of all the Nigerian food product companies under consumer goods companies quoted on the Nigerian Stock Exchange (NSE) as at 2013 fact book. In the NSE, there are 13 food products companies and their years of listing are as shown below:

**Table 3.1:**

*Study Population*

S/NO	COMPANIES NAME	YEAR OF INCORP.	YEAR OF LIST.
1	FLOUR MILLS OF NIGERIA PLC	1960	1979
2	NORTHERN NIG. FLOUR MILLS PLC	1971	1978
3	DANGOTE SUGAR REFINERY PLC	2005	2007
4	UNION DICON PLC	1992	1993
5	MULTI-TREX PLC	1999	2010
6	DANGOTE FLOUR MILLS PLC	2006	2008
7	CADBURY NIGERIA	1965	1976
8	NESTLE FOODS COMPANY	1961	1979
9	HONEYWELL FLOUR MILL PLC	1985	2009
10	P.S. MANRIDES &CO PLC	1949	1979
11	NATIONAL SALT CO. PLC	1973	1992
12	UTC NIG. PLC	1969	1972
13	BIG TREAT PLC	1991	2007

**Source: Generated by the researcher from the NSE Fact Book**

### 3.3.2 Sample Size and Technique

Availability and accuracy of the data is very crucial for studies of this nature. Therefore, the study come-up with some filters in order to generate accurate analysis. Firstly, only those firms which have been in operation for at least five years after being listed in the Nigerian Stock Exchange as at 31 December, 2014 will be selected. Secondly, annual reports of the company with relevant data to the study must be available at the Nigerian Stock Exchange. Firms that did not meet any of these criteria were excluded. This is in line with the study of Kurawa & Kabara (2014). Upon applying the two filters, six companies qualified as the working population of the study which also serve as sample size, as shown in Table 3.2 below:

**Table 3.2:**

*Sample size*

S/N	COMPANANIES	YEAR OF INC.	YEAR OF LIST.
1	FLOUR MILLS OF NIG. PLC	1960	1979
2	CADBURY NIGERIA	1965	1976
3	NESTLE FOODS COMPANY	1961	1979
4	NATIONAL SALT CO. PLC	1973	1992
5	HONEYWELL FLOUR MILL	1985	2009
6	DANGOTE SUGAR PLC	2005	2007

**Source: Generated by the researcher from table 1**

### 3.4 Data Collection

Data is collected from the period of 2010-2014 fiscal year financial statement of the sampled firms. The sample of the data was generated only from the Nigeria food products companies. As explained earlier, this study adopts VAIC Model developed by Pulic (1998). The model have been used by many researchers as it provides relatively unique estimation of the measurement of IC for example (Berzkalne & Zelgalve, 2013; Musibah & Alfattani, 2013; Yusuf, 2013).



### **3.4.1 Data Collection Method**

The study utilized secondary source of data. The hypotheses tested in this study using secondary data from the sample size of the firm's annual reports. Five years (2010 – 2014) data of the sampled companies were gathered from the Thomson Reuters Data Stream and their annual reports. This is because, the periods are the recent periods that would provide an up-to-date information about the impact of IC on financial performance of food products companies in Nigeria. The data collected that are relevant to the study includes total sales, total assets, total salaries, total expenses, net income, total debts and total intangible assets.

### **3.5 Measures of Variables**

Measurement of a variable is essentially the process of assigning numbers to that variables of the study (Abbott & Jennifer, 2013). In scientific research, variables must be measured (Graziano & Micheal, 1993). Thus, measurement of the variables in the theoretical framework is a part and parcel of scientific research and a crucial aspect of research design (Sekeran & Roger, 2013). Leedy & Ormrod, (2010) opined that unless the variables are measured in some means the researcher will not be able to test the hypotheses and eventually to find answers to research questions.

Therefore, based on the above deliberations the current study would measure the variables (dependent and independent) as follows:

#### **3.5.1 Dependent Variable**

Dependent variables are also called effect variables. In this study, financial performance which is measured by ROA is the dependent variable that reflects the

efficiency of firm in utilizing total assets, holding constant firm's financial policy. It also provides information about the value added to the company that lead to better performance of that company. Prior studies like Lina (2014); Salman et al. (2012a) and Dadashinasab & Sofian (2014) used ROA as a measure of financial performance while other studies like Bharathi (2015); (Fathi et al. (2013); Djamil et al. (2013) and Chan (2011) used ROA in addition to other measures such as ROE, M/B and GR for determining financial performance.

$$\text{ROA} = \text{Net income} / \text{Total Assets.}$$

### **3.5.2 Independent Variables**

In this study IC components is the independent variables which includes human, structural and capital employed (Sekeran & Roger, 2013). The current study defined IC as the performance measured by structural capital (VASC) and capital employed (VACE). This is in line with the study of (Lina, 2014; Fathi et al., 2013; Salman et al., 2012b).

The current study adopt VAIC technique developed by Pulic (2008). This is because, VAIC technique is distinctive due to easily availability of audited financial data and it is also less criticized model compared to other models as well as the most recent model among them. Additionally, VAIC has been adopted in several studies to examine the relationship between IC and firm performance (Clarke et al., 2011; Maditinos et al., 2011; Anne-Laure & Nick, 2013).

Justifications for using VAIC in this study, which were adopted from various studies like Kamal et al. (2011), Zeghal & Maaloul (2010), Fathi et al. (2013) are summarized as follows:

- It provides a relatively unique estimations of the measurement.
- It offers a means that are efficient to all stakeholders not just to shareholders.
- Economically, it uses oriented measures so that any indicators, relations or proportions processed may be utilized for comparison alongside conventional budgetary indicators generally found in business, which depend on fiscally inferred units or measures.
- It utilizes relatively basic and straightforward measures in the computation of the important indexes and coefficients, which may be easy to understand

### 3.5.2.1 Value Added Intellectual Coefficient (VAIC)

VAIC monitors and measures the value creation efficiency in the company according to accounting based figures. That is the total IC components. Therefore, for the purpose of model 1 the VAIC is a total of three separate indicators:

$$VAIC_{it} = VA/HC + VA-HC/VA + VA/CE$$

Prior studies like Fathi et al., (2013) computed VAIC by a simple four step procedures, as follows:

STEP 1: Computation of total value added (VA):

$$VA_{it} = OUTPUT_{it} - INPUT_{it} \dots\dots\dots (1)$$

WHERE:

OUTPUT = Total sales

INPUT = All expenses excluding labour expense (except labour incurred by firm for the period).

STEP 2: Computation of Value Added Human Capital Coefficient (VAHC<sub>it</sub>):

VAHC<sub>it</sub> Valued added by one unit of human capital invested during period of t

$$VAHC_{it} = VA/HC \dots\dots\dots 2$$

HC= Total salary and wages including all incentives of employees

STEP 3: Computation of value added structural capital coefficient (VASC<sub>it</sub>):

VASC<sub>it</sub> = It is the proportion of total VA accounted by structural capital.

$$VASC_{it} = VA-HC/VA \dots\dots\dots (3)$$

SC<sub>it</sub> = Structural capital (VA – HC)

STEP 4: Computation of value added capital employed coefficient (VACE<sub>it</sub>):

VACE<sub>it</sub> = the value created by one unit of capital employed during the period t

$$VACE_{it} = VA / CE \dots\dots\dots (4)$$

CE = Total Assets - Intangible Assets at end of period t

STEP 5: Computation of value added intellectual coefficient (VAIC<sub>it</sub>)

$$VAIC_{it} = VA/HC + VA-HC/VA + VA/CE \dots\dots\dots (5)$$

VAIC<sub>it</sub> = the value added intellectual coefficient (Indicate corporate value creation efficiency on firm resources).

### 3.6. Control Variables

These are types of independent variable that studies adopts with the aim that they may potentially influence the dependent variable (Boujelbene & Affes, 2013). Thus, firm size leverage and number of employees are taken as as control variables to the current study (Zeghal & Maaloul, 2010) and (Firer & Williams, 2003).

### **3.6.1 Size of Firm**

Applying firm size as the control variable in this study is stimulated by the way that it has been discovered to be connected with organizations with distinguishing attributes. The firm size has an influence of IC on organization performance (Nimtrakoon, 2015; Ong et al., 2011; Chan, 2011). Prior studies that measured the sizes of the characteristic logarithm of sales and size measured by common logarithm of total assets of the organization includes Iavorskyi (2013); Pouraghajan & Malekian (2012) and Chinaemerem & Anthony (2012).

### **3.6.2 Leverage**

The debt proportion is characterized as the whole of long-term debt of the firm or degree of risk (liabilities) as a rate of aggregate assets. It asserts that the debt proportion has an influence on all the financial performance of the firm. From one perspective, a positive impact may come about because of decreased cash flow. These studies have predicted that the debt has an impact on the company's financial performance.

### **3.7 Model Specification**

In order to test the linear fit of the model, the researcher calculated the coefficient of multiple regressions as shown below. In line with the prior studies carried out by Asare, Simpson, & Onumah (2013) and Ahangar (2011) the current study develop two models. The first model is to associate VAIC with ROA while the second model associates SC and CE with ROA individually. Therefore, the regression equations of this study are as follows:

$$ROA_{it} = \beta_0 + \beta_1(VAIC)_{it} + \beta_2(SIZE)_{it} + \beta_3(LEV)_{it} + \epsilon_{it} \dots\dots\dots 1$$

$$ROA_{it} = \beta_0 + \beta_2(VASC)_{it} + \beta_3(VACE)_{it} + \beta_4(SIZE)_{it} + \beta_5(LEV)_{it} + \epsilon_{it} \dots\dots\dots 2$$

Where:

ROA = Return on Assets

VAIC = Value added intellectual capital

VASC = value added structural capital

VACE = value added Capital employed

SIZE = Size of the firm

LEV = leverage

i = firm =1-6

t = period t = 2010-2014

$\beta$  = Beta

$\epsilon$  = error term

### 3.8 Tools and Techniques

A research tools are the special mechanisms adopted by the study to collect, manipulate or interpret data. While techniques are the general approaches the researcher think fit in conducting the study. These to some extent, are approach shows the particular tools the researcher selects (Leedy & Ormrod, 2010). Therefore, the current study apply the following tools and techniques in carrying out this study. This is in line with the study of Arslan & Zaman (2014) and Deep & Narwal, (2014).

#### 3.8.1 Descriptive Statistics

As the name implied, descriptive statistics describes a body of data that includes either a graphical or numerical procedures to assists the researcher to understand and see

patterns in data (Abbott & Jennifer, 2013). By using descriptive statistical techniques, the study can present the data in such a way that whatever patterns exist can be assessed numerically (Abbott & Jennifer, 2013; Leedy & Ormrod, 2010). Therefore, for a proper understanding of the data, the current study apply basic descriptive statistics.

### **3.8.2 Correlation Analysis**

In order to gain more insight in testing the hypotheses, direction and magnitude of relationships among all variables were examined by conducting correlation test. Correlations analysis is considered as a tool of statistic used to explain the level by which one independent variable is identified with another (Levin & Rubin, 1998). This analysis denotes the introductory as per as the statistical techniques of observing relationship between independents and dependent variable.

Consequently, the study used correlation analysis in determining the relationship between VAIC, SC and CE independent variables with dependent variable (ROA) as this would aid in creating a good forecasting in multiple model. In the process where no relationship is found the estimation of correlation is 0.

### **3.8.3 Multiple Regression**

Multiple regression is always used in the situation whereby independent variable(s) is hypothesized to influence dependent variable(s). Its analysis gives a justification of objectivity measuring the level and the character between the variables of the study (Sekaran & Roger Bougie, 2013).

This study involves main analysis namely the IC and financial performance relationship. It comprises the discussion, based on overall multiple regression models of VAIC, VASC and VACE variables on one dependent financial performance variable (ROA). Prior studies that adopts this model includes Lina (2014); Salman et al. (2012); Al-Musali & Ismail (2014) and Fathi et al. (2013).

#### **3.8.4 Stata 11**

After collecting the required data, the current study used statistical software STATA 11 in order to process and develop evidence patterns related to the framework of this study. The study used this software due its simplicity and user friendly criteria and it is suitable to analyse the type of data collected for this study. This is in line with of Kurawa & Kabara (2014) and Mehri et al. (2013).

#### **3.9 Summary**

The study develops four hypotheses which denote that IC, SC and CE influence the firm's financial performance of listed food products companies in Nigeria. The final size of the sample used in the study is six listed food products companies in Nigeria. The study covers five-year period from 2010-2014. The data used is secondary data which are obtained from the Thomson Reuters DataStream and annual reports of listed food products companies in Nigeria. Financial performance is the dependent variable and measured by ROA. VAIC, VASC and VACE are independent variables.



## CHAPTER FOUR

### DATA ANALYSIS AND RESULTS

#### 4.0 Introduction

This chapter presents the results of the study about the IC and financial performance of listed food products companies in Nigeria. From the onset, descriptive statistics have been adopted to represent the general condition of the designated variables for this study. Diagnostic tests have also been carried out. These include normality and multicollinearity test. Under multicollinearity test, correlation and variance inflation factor were assessed to determine the level of associations between the independent variables of the study. Consequently, multiple regression has been employed to examine the influence of IC, SC and CE on companies' financial performance.

#### 4.1 Descriptive Statistics

Descriptive statistics merely presents the statistical attributes of the variables in the model of the study is represented in Table 4.1 below

**Table 4.1**

*Descriptive Statistics for VAIC and ROA.*

Variables	Obs	Mean	Std. Dev.	Min	Max
ROA	30	0.1338	0.0783	0.0275	0.2759
VAIC	30	5.4789	8.8124	-3.4337	36.5924
SIZE	30	7.6966	0.4069	6.8959	8.3500
LEV	30	0.3893	0.1797	0.1265	0.8766

As shown in Table 4.1, there are 30 observations of the total sample size ranging from the five years under study (2010-2014). The mean value of VAIC is 5.4789 the minimum value is -3.4337 and the maximum value is 36.5924. The values of standard deviation of VAIC is 8.8124. For ROA, the mean value is 0.1338 which indicates that ROA is low to minimum value of 0.0275 and the maximum is 0.2759, where standard

deviation is 0.0783 for the overall firms in this study. The mean value of size of the study was 7.6966 and its minimum value was 6.8959 while the maximum value is 8.3500. The standard deviation is 0.4069. For leverage, it has a minimum value of 0.1265 and maximum value is 0.8766 while standard deviation is 0.1797.

**Table 4.2**

*Descriptive Statistics for SC and CE with ROA.*

Variables	Obs	Mean	Std. Dev.	Min	Max
ROA	30	0.1338	0.0783	0.0275	0.2759
SC	30	0.2736	0.9462	-3.6857	0.9708
CE	30	0.2708	0.3732	0.0386	1.8306
SIZE	30	7.6966	0.4069	6.8959	8.3500
LEV	30	0.3893	0.1797	0.1265	0.8766

Table 4.2 presents the descriptive results of variables in model 2. The results reveals that the mean value of SC is 0.2736; this means that SC tend to be very low because the minimum value is -3.6857 and the maximum is 0.9708 while its standard deviation is 0.9462. The mean value of CE is 0.2708 while the minimum value is 0.3857 and maximum value is 1.8306. The standard deviation is low i.e. 0.3732. For ROA, the mean value is 0.1338 which indicates that ROA is low to minimum value of 0.0275 and the maximum is 0.2759, while standard deviation is 0.0783 for the overall firms in this study. The mean value of size was 7.6966 and its minimum value was 6.8959 while the maximum value 8.3500. The standard deviation is 0.4069. For leverage, it has a minimum value of 0.1265 and maximum value is 0.8766 while standard deviation is 0.1797.

#### **4.2 Diagnostic Test**

Before analysing the data, the assumption of psychometric characteristic was confirmed. Thus, to ensure the trustworthiness and quality of the generated data for the study and before running the data for multiple regression analysis, there are a

number of key expectations related with the multiple regression analysis. Hair, et al. (2006) reveals that there are number of assumptions that need to be met to ensure that a model in which the actual errors in prediction are as a result of the real absence of a relationship or an association among the variables of the study which is caused by some peculiarities of the data not accommodated by the regression procedure. Thus, normality and multicollinearity tests are considered for this study. This is in line with the study of Kurawa & Kabara (2014).

#### 4.2.1 Normality Test

As the name implied, normality, being the fundamental postulation in data analysis, refers to the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution (Almusali, 2009; Hair et al., 2006). Based on the guidelines projected by Kline (2005) of severe non-normality “skewness > 3; kurtosis > 10”, values in Table 4.3 for model 1 and Table 4.4 for model 2 dropped within the cut-off point and could be regarded as normal for further analyses of the study.

**Table 4.3**

*Result of Normality Test of Model 1*

Variables	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
ROA	30	0.5852	0.0016	8.6300	0.0134
VAIC	30	0.0000	0.0001	26.7600	0.0000
SIZE	30	0.4157	0.4422	1.3400	0.5108
LEV	30	0.0044	0.0670	9.4700	0.0088

**Table 4.4**

*Result of Normality Test of Model 2*

Variables	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
ROA	30	0.5852	0.0016	8.6300	0.0134
SC	30	0.0000	0.0000	27.8500	0.0000
CE	30	0.0000	0.0000	31.4500	0.0000
SIZE	30	0.4157	0.4422	1.3400	0.5108
LEV	30	0.0044	0.0670	9.4700	0.0088

## 4.2.2 Multicollinearity

After observing the normality of the data, there is a need to diagnose whether the independent variables of the study are correlated with each other, such association among the variables is termed as multicollinearity. Najibullah (2005) stated that multicollinearity is the degree in which a variables can be described by the other variables of the same study. Multicollinearity is the problem which affects the data of the study negatively therefore, it is crucial to prevent the data by detecting and correcting multicollinearity problem before analysing the data (Hair et al., 2006). As mentioned earlier, in order to check the multicollinearity, the study applied correlation coefficient and variance inflation factor (VIF) diagnostic tests.

### 4.2.2.1 Correlation Analysis

Correlation analysis is the first analysis carried out in order to examine whether any association exists between the independent variables of the study in question. Hair et al., (2006) projected that a threshold value of 0.9 and high among the independent variables as collinearity. Base on this projection, Table 4.5 and Table 4.6 for model 1 and 2 respectively indicate vividly that multicollinearity is not a problem for the data of this study. As shown in Table 4.5 of model 1, the values of VAIC, SIZE and LEV against each other does not exceed 0.9 while Table 4.6 of model 2 the values of SC, CE, SIZE and LEV against each other are all less than 0.9.

**Table 4.5**

*Correlation of VAIC and Firms` Financial Performance and VAIC*

	ROA	VAIC	SIZE	LEV
ROA	1.0000			
VAIC	0.3851**	1.0000		
SIZE	0.3856**	0.0022*	1.0000	
LEV	0.2281**	0.1192**	0.3346**	1.0000

\*\* Indicates a high significant level at 0.05

\* Indicates a significant level at 0.01

**Table 4.6***Correlation of SC and CE with Firms` Financial Performance*

	ROA	SC	CE	SIZE	LEV
ROA	1.0000				
SC	0.3890**	1.0000			
CE	0.4977**	0.2748**	1.0000		
SIZE	0.3856**	0.1869**	0.1586**	1.0000	
LEV	0.2281**	0.0892*	0.2182**	0.3346**	1.0000

\*\*Indicates a very high significant level at 0.05

\* Indicates a high significant level at 0.01

**4.2.2.2 Variance Inflation Factor (VIF)**

Absence of multicollinearity of correlation analysis is not a surety that the data of the study is free from multicollinearity totally (Hair et. al, 2006). Therefore, the study again applied VIF analysis to examine the existence of multicollinearity in the data. Kline (2005) and Silver (1997) mentioned that VIF value of less than 10 indicates an absences of multicollinearity. Thus, the values appear in Table 4.7 and 4.8 for both model 1 and model 2 indicate non-existence of multicollinearity whereby the value for VAIC, SIZE and LEV in Table 4.7 of model 1 are less than 10. Likewise the VIF values for all variables in Table 4.8 of model 2 are also less than 10. Therefore, the data can be considered appropriate for analysis.

**Table 4.7***Variance Inflation Factor (VIF): Financial Performance and VAIC*

Variables	VIF	1/VIF
VAIC	1.1	0.90535
SIZE	1.71	0.58372
LEV	1.16	0.85859
Mean VIF	1.5	

**Table 4.8***Variance Inflation Factor (VIF): Financial Performance and IC Components*

Variable	VIF	1/VIF
SIZE	1.19	0.843029
CE	1.18	0.844852
LEV	1.17	0.853040
SC	1.16	0.862857
Mean VIF	1.18	

### 4.3 Hypotheses Testing

#### 4.3.1 Regression Analysis

Hair et al. (2006) opined that regression analysis is a linear combination of weighted independent variables collectively used in the study to project the weight of dependent variable. In presenting the results of the regression analysis, the explanatory power (R square) of the regression models and the standardised regression coefficients ( $\beta$ ) are presented. The study regresses the dependent variable (ROA) with the overall independent variable (VAIC) and then associates' dependent variable (ROA) with individual components of IC that is SC and CE. This is consistency with the study of Fathi et al. (2013); Mehri et al. (2013) and Chan, (2011).

**Table 4.9**

*Regression Results of VAIC and Firms' Financial Performance*

ROA	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
VAIC	0.0034	0.0015	2.2900	0.0300**	0.0003 0.0064
SIZE	0.0705	0.0335	2.1000	0.0450**	0.1394 0.0016
LEV	0.0263	0.0765	0.3400	0.0073*	0.1835 0.1308
_cons	0.6682	0.2498	2.6700	0.0130**	0.1547 1.1817

Number of obs = 30  
 F( 3, 26) = 3.73  
 Prob > F = 0.0236  
 R-squared = 0.3008  
 Adj R-squared = 0.2201  
 Root MSE = 0.06917

\*\* Indicates a significant level at 0.05

\* Indicates a significant level at 0.01

Tables 4.9 presents the results of model 1 of the study [ $ROA_{it} = \beta_0 + \beta_1 (VAIC)_{it} + \beta_2 (SIZE)_{it} + \beta_3 (LEV)_{it} + \epsilon_{it}$ .....1]

The results show that the coefficient on VAIC are positively significant concerning their association with financial performance. This indicates that VAIC has an influence

on firm's financial performance. This situation implies that food products companies in Nigeria with greater IC perform better in terms of return on assets.

Table 4.9 also shows that the coefficient of determinations that is "adjusted R-square" value is 0.2201 indicating that the variables considered in the model accounts for about 22% change in the dependent variable (ROA),

In appraising the first model, based on the regression result in Table 4.9, it is suggested that VAIC positively influences firms' financial performance, this can be justified with the positive "t" value of 2.2900 and  $P > |t| 0.0300$ . Likewise the results reveals a positive coefficient of 0.0015 which proves that an increase in VAIC by one more unit increases financial performance by 0.0015 times. This result is consistent with the findings of Fathi et al. (2013) which reveal that VAIC associated positively with ROA among listed firms in Iran.

Similarly, the relationship between firms' size and ROA is positive and significant, this can be justified with the positive "t" value of 2.1000 and  $P > |t| 0.0450$ . Similarly the results shows positive coefficient of 0.0705 which attest that, an increase in size by one more unit, other independent variables remaining constant increases the financial performance of Nigerian food products company by 0.0705. This result is consistent with the findings of Chan, (2011). In addition, the relationship between leverage and ROA is also positively significant at 5% where "t" value of 0.3400  $P > |t| 0.0073$ . Equally, the results reveals a positive coefficient of 0.0263 is proving that, an increase in leverage by one more unit, other independent variables remaining constant,

increases financial performance by 0.0263. The result is consistency with the study of Salman et al. (2012).

**Table 4.10**

*Regression Results of SC & CE and Firms' Financial Performance*

ROA	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
SC	0.0314	0.0130	2.4200	0.0230**	0.0046 0.0581
CE	0.0669	0.0333	2.0100	0.0500**	0.0017 0.1354
SIZE	0.0740	0.0306	2.4200	0.0230**	0.1370 -0.0111
LEV	0.0278	0.0688	0.4000	0.0069*	0.1694 0.1139
_cons	0.6877	0.2303	2.9900	0.0060	0.2134 1.1620

Number of obs	=	30
F( 4, 25)	=	5.52
Prob > F	=	0.0025
R-squared	=	0.4688
Adj R-squared	=	0.3839
Root MSE	=	0.06149

\*\* Indicates a significant level at 0.05

\* Indicates a significant level at 0.01

Table 4.10 shows the results of model 2  $ROA_{it} = \beta_0 + \beta_1 (VASC)_{it} + \beta_2 (VACE)_{it} + \beta_3 (SIZE)_{it} + \beta_4 (LEV)_{it} + \epsilon_{it}$ .

The results show that ROA is related with SC and CE, suggesting that the IC components of structural capital and capital employed have influence on firms' financial performance.

Table 4.10 presents the value of adjusted R square of model 2 for SC and CE is 0.3839 which reveals that the two components of IC describe 38% variability in firms' financial performance.



In analysing the model 2, as shown in Table 4.10, the results show that the relationship between ROA and SC is positively significant, this can be explained by observing the positive “t” value of 2.4200 and  $P > |t|$  0.0230 at 5%. Likewise the results reveals a positive coefficient of 0.0314 which indicating that, an increase in SC by one more unit, other independent variables remaining constant increases financial performance by 0.0314. This implies that, SC has a significant positive influence on ROA. This result is consistent with the findings of Fathi et al. (2013) and Bharathi (2015) which reveal that SC associated positively with ROA among listed firms in Iran and India respectively.

In the same vein, the relationship between CE and ROA is positively significant at 5%. This can be justified through the positive “t” value of 2.0100 and  $P > |t|$  0.0500. It has been also validated by the positive coefficient of 0.0669 which means that, an increase in CE by one more unit, other independent variables remaining constant increases the firms’ financial performance by 0.0669. This implies that, CE has a positive and significant influence on ROA. Similarly, under this model, relationship between size and ROA is positive and significant at 5%, this can be explained by observing the positive “t” value of 2.4200 and  $P > |t|$  0.0230, which shows that positive coefficient of 0.0740 attest that, an increase in size by one more unit, other independent variables remaining constant, increase the financial performance of Nigerian food products by 0.0740, this is also in line with the findings of Chan, (2011) in Hong Kong.

Again, the relationship between leverage and ROA is positively significant at 1% where “t” value of 0.4000 while  $P > |t|$  0.0069. Similarly, the results reveals a positive

coefficient of 0.0278 which show that, an increase in leverage by one more unit, other independent variables remaining constant increases financial performance by 0.0278.

A possible explanation for these results is that, food products firms in Nigeria are trying to increase their performance through the employment of more capital and placing high efforts in utilizing its structural capital more especially in the current contemporary world of information technology and knowledge-based environment.

Overall, it can be said that these findings answered research questions since it shows that VAIC and its components i.e SC and CE contribute significantly to firms' financial performance. By observing the results of the study, aim and objectives of the study are also attained.

#### **4.2 Summary**

After ensuring that there is absence of multicollinearity, regression analysis have been carried out. The analyses on both models provide evidences that VAIC, SC and CE has a significant positive influence on firm's financial performance exists.

## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

#### 5.0 Introduction

In this chapter, findings of the results related to the hypotheses are discussed, in accordance with research questions and objectives. Findings and their implications are also emphasized. Conclusions and recommendations are drawn in accordance with the findings. After highlighting strength and limitations of the study, the discussion shed light on areas that future researchers could attempt.

#### 5.1 Discussions of the Results

IC, SC and CE has been hypothesised to influence the financial performance (ROA) of listed food products companies in Nigeria. The empirical results provide evidences for the three hypotheses relating to IC and firm's financial performance.

The results also show that adjusted R-square in model 2 that comprises components of IC (SC and CE) has higher explanatory power of 38% as compared to that in model 1 where the adjusted R-squared is 22%,. These findings are corroborated by the study of Bharathi (2015) which associated IC with financial performance and valuation of firms in India .

For the findings in relations to the two control variables used in the study, firm leverage and firm size, the results from the two models suggest that firm leverage is positively associated with the financial performance of the food products of the companies in Nigeria. This positive and significant association appears to suggest that base on the

Nigerian investors in this recent times tends to value food products companies than other companies. Secondly the positive relationship appears to suggest that Nigerian government moves from mono economy to diversified economy where food products and other agricultural companies are getting more attention from the government.

Results also indicate that firm size is positively associated with financial performance of food products companies, appears to suggest that in Nigeria, companies with a larger market capitalisation may tend to be more productive in terms of the revenue generated per unit of asset invested.

The empirical findings of the study are consistence with the underpinning theory of the study. Based on the resource-based view (RBV), the theory emphasized on the role of intangible resources and organizational capabilities which include analysing IC in generating a firm's sustainable competitive advantages, this is because the results shows that IC influence the financial performance of food products companies in Nigeria by maintaining their structural capital and utilising their capital employed, this is in line with the study of (Noordin, 2014).

## **5.2 Conclusion**

Based on the resource-based view (RBV) of the organization, firms achieve a greater improvements and best performance by obtaining and judicious utilization of IC which no doubt has an essential benefits for competitive advantages. Therefore, the current study investigates the impact of IC on the performance of food products companies. The study reveals that IC has a positive and significant influence on with the financial performance of food products companies. In relations to SC and CE as components of IC the study proves that:

1. SC has a positive and significant influence on ROA in model 2 suggesting the enhancement in financial performance via the instalments of SC facilities. This can be achieved by providing the employees with best possible technologies and well talented business strategies in carrying out their work or excellent chain of command in the firms.
2. The results show that CE is also significant and has positive influence on financial performances. This signifies that increasing and maintaining the financial and non-financial capital contributes greatly in improving the profitability and productivity of the Nigerian food products companies.

It is hope that this study has depicted the genuineness of the IC development condition in one of the most affluent country in Africa that is Nigeria and the study not only contributes to the knowledge of IC research in Nigeria, but also highlights the requirement for local policy makers, business leaders and governments to pay more attention to the cultivation of IC as a strategic asset to sustain in a knowledge-based economy.

### **5.3 Implication of the Findings**

This study reveals that apart from traditional factors of production, under current contemporary world of knowledge-based economy, IC has a positive and significance influence on financial performance of food products companies in Nigeria. Therefore, this results has an implication to: policy makers, researchers, managers, potential and existing shareholders, academics, accounting regulators and others. The implications of the findings can be divided into two aspects:

### **5.3.1 Theoretical Implications of the Findings for Research**

1. The results of this study could be useful to academics and researchers studying IC and firm's financial performance worldwide. The findings of this study will motivate them to investigate further towards the development of IC, especially to gather evidences from other industries and regions.
2. Due to the tremendous development in IT and knowledge-based business context, the results suggest that a course related to the management of IC can be introduced to develop a well-equipped IC managers in order to reduce the economic recession effects in the world and unnecessary liquidations of companies.
3. The results of this research also provide evidence towards the RBV in the Nigerian food products companies. Hence, the results shed light towards the application of this view to enhance firm's financial performance especially in Nigerian context.

### **5.3.2 Practical Implications**

1. The results of this research would alert the directors and managers of companies to consider the effectiveness of IC towards increasing financial performance of Nigerian food products companies. It is hope that the results will provide IC for the firm more than tangible and physical assets to increase firm value.
2. The findings of this study would provide hints to food products companies which faced the difficulty in leveraging and managing the intangible assets in corresponding to the globalization era of technology and knowledge-based economy.

3. The findings would also remind the accounting regulators, standard setters to incorporate and emphasize the management of IC in the accounting standard especially in international financial reporting standard (IFRS) applied in Nigeria and local generally acceptable accounting principles (GAAPs).
4. The results would alert the Nigeria government and policy makers to emphasize more in intangible assets development besides focusing on in traditional factors of production.

#### **5.4 Recommendations**

The following are recommendations of this study:

1. There is a need to have a separate department called IC department, so that clear and proper records of all components of IC should be kept by the companies.
2. There is a need to policy makers and standard setters to include IC in the IFRS due to the modern era of knowledge-based economies in the world.
3. In order to have an IC managers and up-to-date accountant there is a need to emphasize IC development and management of in the modern syllabus of higher institutions of learning especially in Nigeria.

#### **5.5 The Limitations of the Study**

As discussed earlier, study proves the influence of IC in the performance of the Nigerian food products companies. However, the study has some limitations as follows:

- Unavailability of required data during this study. Thus, it necessitates the study to use the available data at hand to carry out this research work.

- The selected firms are confined to only firms listed in Nigerian Stock Exchange (NSE).
- This research only uses data for five years. Study with longer period of data may provide different findings and more stable.
- The study uses only one variable (ROA) to measure the financial performance of one of the most important sub-sector in the consumer industry in Nigeria.

### **5.6 Suggestions for Future Research**

The findings of the present study offers opportunities for further investigations.

Therefore, future researchers could investigate the following areas of study:

- Analysis in the present study draws on data from Nigeria only and from sub-sector (food products) within consumer industry reliant on IC. Thus, future researcher could conduct further research by using data from different nations and different industries reliant on IC in order to provide further evidence on the impact of IC on firm's financial performance.
- Studies can also be carried out on consumer industry in Nigeria by using more than one measurement of firm's financial performance such as return on equity (ROE), assets turn over (ATO) Market-to book value ratio (M/B) to investigate the impact of IC.



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## APPENDIX

### DESCRIPTIVE STATISTICS OF MODEL ONE

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	30	0.1338	0.0783	0.0275	0.2759
vaic	30	5.4789	8.8124	-3.4337	36.5924
size	30	7.6966	0.4069	6.8959	8.3500
lev	30	0.3893	0.1797	0.1265	0.8766

### NORMALITY TEST OF MODEL ONE

Variables	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
roa	30	0.5852	0.0016	8.6300	0.0134
vaic	30	0.0000	0.0001	26.7600	0.0000
size	30	0.4157	0.4422	1.3400	0.5108
lev	30	0.0044	0.0670	9.4700	0.0088

### CORRELATION OF MODEL ONE

	roa	vaic	size	lev
roa	1.0000			
vaic	0.3851	1.0000		
size	-0.3856	0.0022	1.0000	
lev	-0.2281	-0.1192	0.3346	1.0000

### VARIANCE INFLATION FACTOR OF MODEL ONE

Variables	VIF	1/VIF
VAIC	1.1	0.90535
SIZE	1.71	0.58372
LEV	1.16	0.85859
Mean VIF	1.5	

## REGRESSION ANALYSIS OF MODEL ONE

roa	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
vaic	0.0034	0.0015	2.2900	0.0300	0.0003	0.0064
size	0.0705	0.0335	2.1000	0.0450	0.1394	0.0016
lev	0.0263	0.0765	0.3400	0.0073	0.1835	0.1308
_cons	0.6682	0.2498	2.6700	0.0130	0.1547	1.1817

Number of obs = 30  
F( 3, 26) = 3.73  
Prob > F = 0.0236  
R-squared = 0.3008  
Adj R-squared = 0.2201  
Root MSE = 0.06917

### DESCRIPTIVE STATISTICS OF MODEL TWO

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	30	0.1338	0.0783	0.0275	0.2759
sc	30	0.2736	0.9462	-3.6857	0.9708
ce	30	0.2708	0.3732	0.0386	1.8306
size	30	7.6966	0.4069	6.8959	8.3500
lev	30	0.3893	0.1797	0.1265	0.8766

### NORMALITY TEST OF MODEL TWO

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
roa	30	0.5852	0.0016	8.6300	0.0134
sc	30	0.0000	0.0000	27.8500	0.0000
ce	30	0.0000	0.0000	31.4500	0.0000
size	30	0.4157	0.4422	1.3400	0.5108
lev	30	0.0044	0.0670	9.4700	0.0088

### CORRELATION OF MODEL TWO

	roa	sc	ce	size	lev
roa	1.0000				
sc	0.3890	1.0000			
ce	0.4977	0.2748	1.0000		
size	0.3856	0.1869	0.1586	1.0000	
lev	0.2281	0.0892	0.2182	0.3346	1.0000

### VARIANCE INFLATION FACTOR OF MODEL TWO

Variable	VIF	1/VIF
size	1.19	0.843029
ce	1.18	0.844852
lev	1.17	0.853040
sc	1.16	0.862857
Mean VIF	1.18	



## REGRESSION ANALYSIS OF MODEL TWO

roa	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
sc	0.0314	0.0130	2.4200	0.0230	0.0046	0.0581
ce	0.0669	0.0333	2.0100	0.0500	0.0017	0.1354
size	0.0740	0.0306	2.4200	0.0230	0.1370	0.0111
lev	0.0278	0.0688	0.4000	0.0069	0.1694	0.1139
_cons	0.6877	0.2303	2.9900	0.0060	0.2134	1.1620

Source	SS	df	MS
Model	0.08342	4	0.02086
Residual	0.09451	25	0.00378
Total	0.17794	29	0.00614

Number of obs = 30  
 F( 4, 25) = 5.52  
 Prob > F = 0.0025  
 R-squared = 0.4688  
 Adj R-squared = 0.3839  
 Root MSE = 0.06149