

**INTELLECTUAL CAPITAL AND FIRMS FINANCIAL PERFORMANCE IN
NIGERIA**

BY

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**BEING A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF
ACCOUNTING, FACULTY OF MANAGEMENT SCIENCE, UNIVERSITY OF
BENIN, BENIN CITY, IN PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE AWARD OF BACHELOR OF SCIENCES (B.Sc.), DEGREE IN
ACCOUNTING.**

MAY, 2024

DECLARATION

I declare that,

- I. This project is based on study undertaken by me in the Department of accounting, University of Benin under the supervision of Dr. Ohidoa
- II. This work has not been previously submitted for the award of any degree elsewhere.
- III. All ideas and views are product of my research and where the view of others has been expressed, they have been duly acknowledged.
- IV. All liabilities arising from the study are entirely mine and not that of my supervisor.

HUSSAINI SULEIMAN

DATE

CERTIFICATION

This is to certify that this project work was carried out by HUSSAINI SULEIMAN with Matriculation Number MGS1907665 in the Department of Accounting, Faculty of Management Sciences, university of Benin, Benin City in partial fulfillment of the requirement for the award of Bachelor of Science (B.Sc.) Degree in Accounting.

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(Head of Department)

DATE

DEDICATION

With profound gratitude and appreciation, I want to dedicate this project to the almighty GOD for this infinite mercy, love, abundant grace, blessings, continuous guidance, strength and protection throughout my stay in this University of Benin.

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From the depth of my heart, I wish to express my gratitude to GOD Almighty for all he has done for me. I also want to sincerely express my profound gratitude to my Father and Mother, Mr. and Mrs. HUSSAINI for their parenthood, prayer, financial, and moral support.

The value you instilled in me has formed the bedrock of my work ethic, perseverance and passion. This project's completion is a testament to the enduring love and guidance you've provided throughout my journey.

As I reflect on this achievement, I am reminded of the countless moments you believed in me even when I doubted myself. Your contributions have been immeasurable, and I am humbled to dedicate this success to both of you, who have been my unwavering champions.

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TABLE OF CONTENTS

TITLE PAGE	i
DECLARATION	ii
CERTIFICATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES	xi
ABSTRACT	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background to the Study	1
1.2 Statement of Research problem.....	5
1.3 Research Question.....	7
1.4 Objective of the study	7
1.5 Statement of Research hypotheses	8
1.6 Significances of the Study.....	8
1.7 Scope of Study.	9
CHAPTER TWO: LITERATURE REVIEW	10
2.0 Introduction	10

2.1 CONCEPTUAL REVIEW	10
2.1.1 Intellectual Capital Concept.....	10
2.1.2 ELEMENT OF INTELLECTUAL CAPITAL:	15
2.1.2.1 Human Capital.....	16
2.1.2.2 STRUCTURAL CAPITAL.....	17
2.1.2.3. CAPITAL EMPLOYED	18
2.1.6 INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE:	19
2.1.7 INTELLECTUAL CAPITAL AND MARKET VALUE:	20
2.2 THEORITICAL FRAMEWORK	22
2.2.1 Resource Based View of the Firm (RBV).....	22
2.3 Empirical Review	24
2.3.2 EMPIRICAL REVIEW BASED ON OBJECTIVE:	26
2.3.3 Empirical Review Based on Objectives 4 and 5 Using Employee Productivity and Company Process Proxies for Non-Financial Performance.....	27
2.3.4 Empirical Review Based on Objective 6 Using Market Value as Proxy for Firms Financial Performance.....	28
2.3.5 EMPIRICAL REVIEW BASED ON OTHER CRITERIA:	32
2.3.6 EMPIRICAL REVIEW BASED ON STUDIES IN NIGERIA.....	33

2.4 RESEARCH GAP.....	37
CHAPTER THREE: METHODOLOGY	38
3.0 Introduction.....	38
3.1 Research Design.....	38
3.2 Population of The Study.....	38
3.3 Sample and Sampling Technique.....	39
3.3 Sources of Data	39
3.4 Method of Data Analysis	40
3.5 Model Specification	40
CHAPTER FOUR: DATA PRESENTATION AND INTERPRETATION	44
CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS.....	51
5.1 Conclusion and Policy Recommendations.....	51
5.2 Summary of Findings.....	51
REFERENCES.....	52

LIST OF TABLES

Table 4.1: Summary Statistics	44
Table 4.2: Multicollinearity Test	46
Table 4.3: Model Selection Test	47
Table 4.4: Estimation Results	48

ABSTRACT

Motivated by the important role Intellectual capital plays in firms' performance, this study investigates the role of intellectual capital on the performance of Food, Beverage, and Tobacco (FBT) companies in Nigeria. The study relied on Secondary data covering 2012-2022, which were sourced from the yearly audited reports of the FBT corporations. The analytical method employed for the study is the pooled ordinary least squares (Pooled OLS) estimator. The empirical results revealed that capital employed efficiency and human capital efficiency are negatively related to financial performance, albeit only human capital efficiency is significantly related. Structural capital efficiency is positively and significantly related to financial performance. The interactive terms of capital employed efficiency, human capital efficiency and structural capital efficiency are positively and significantly related to financial performance. Based on the findings, the study concluded that the combination of intellectual capital components is a major driver of the performance of FBT companies in Nigeria. Consequently, this study recommended that FBT firms should give greater emphasis to the interaction of the major components of IC because of its ability to influence their financial performance positively.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Organisations face numerous challenges in the current business landscape due to the knowledge-based economy and globalisation. This intense competition has created a demand for new tools that provide a competitive advantage in the market. In this context, information has become the new weapon for contemporary businesses operating in the knowledge economy. Knowledge is now recognised as a crucial driver of corporate development (Siltaoja, 2014). Successful companies place a greater emphasis on the skills and knowledge of their employees rather than tangible assets. Intangible assets play a vital role in improving business performance. In this age of awareness, intangible assets such as knowledge, research, trademarks, customer relations, and innovation have surpassed the importance of tangible assets (Nagaraja & Vinay, 2016).

Financial performance is an important issue as it is the major purpose of setting up a business organisation. Every business firm is expected to use the financial resources available to generate profit, a measure of financial performance. There is a paradigm shift in assessing a firm performance from a sole emphasis on traditional assets like plants, equipment and machinery. Greater emphasis is now being given to special talents, skills and creativity of the employees and management in that establishment (Inyada, 2018). Modern institutions now attach greater value to intellectual capital (thereafter IC) as they

now see it as an integral of organisational assets (Orugun & Aduku, 2017). Bueno (2016) emphasised that automated companies now invest heavily in IC because of its important role in organisational survival in the ever-increasing global competitive landscape.

The study examines the possible association between capital structure of the firm and financial performance of listed conglomerates firms in Nigeria. It is also one of the very few examples in Nigeria, which attempts to test the relationship between capital structure and financial performance.

A firm financial performance is measured by how well of the firm is at the end of a period, than it was at the beginning and this can be determined using ratios derived from financial or using data or stock market price (Berger and Patti, 2016). These ratios can serve as indication whether the firm is achieving its objectives or not. These ratios can be used to compare a firm's ratio with other firms or to final trends or performance overtime. A firm financial performance depends to a large extent on its financing decisions. Its basics resource is the steams of cash flows produced by its assets when the firm is financed entirely by common stock all of those cash flows, it belongs to the stockholder when it issues both debt and equity securities, it undertake to split up the cash flows into two streams, a relatively safe steam that goes to the debt-holders end and a more risky one that gives to the stock holders.

The aim of the study is to enhance knowledge innovation and overall value creation. In Nigeria fostering intellectual capital can positively impact a company's financial

performance by improving efficiency, competitiveness and ability to adapt to market charges. It involves leveraging intangible asset such as human capital, customer relationship and organizational process to achieve sustainable growth and profitability.

Stewart (2020) defines intellectual capital as the total stocks of collective knowledge, information, technologies, intellectual property rights, experience, organizational learning and competence, team communication systems, customer relation and brands that can create value for a firm. Similarly, intellectual capital is seen as the group of knowledge, assets that are attributed to an organization and most significantly contribute to an improved competitive position of this organization by adding value to defined stakeholders. Roos & Roos. (2021) defined intellectual capital as the hidden asset of the company not fully captured on the statement of financial position.

Intellectual capital includes human capital, structural capital, wrapped in customers processes, database brands and systems and has been playing an increasing important role in creating corporate sustainable competitive advantages (Kaplan & Norton, 2004). Intellectual capital cannot be complete without adjoining human capital, relational capital and structural capital component; (Al-musali & ismail, 2016)

Financial performance is measure of how a company's ability to create profit, or revenue. How to measure the company's financial performance in creating profit, especially companies in the financial industry such as banking. This can be viewed from the financial statement. The financial statements consist of; (a) A balance sheet (b)Income

(c)Cash flow (d)Changes in the capital (Fatihudin & Mocklas, 2018). Financial performance is the company's financial condition over a certain period that includes the collection and use of funds measured by several indicator of capital adequacy ratio, liquidity, leverage, solvency and profitability, financial performance is the company's ability to manage and control its resources (poonga Vanam, Mohammed & Rengamani, 2017).

Despite the shift towards human capital intensive economy, traditional accounting has continued to focus more on the physical assets in their financial statements to the exclusion of the more important assets, the intellectual capital (Amstrong, 2006).

As consequence of the above, management is denied of relevant and timely data which enables her to take vital decision regarding her human resources, especially the cost implication of certain decision. Bornemamn (2000) found that enterprises which have managed their intellectual capital better, had achieved stronger competitive advantage than the general enterprises and that companies which had strengthen their own intellectual capital management compared to the others had performed better. Brenman and Connel (2000) posit that intellectual capital management played an important role on the long term business performance of enterprises. To increase the financial performance organizations normally focus on their physical assets without adequate attention on their intellectual capital but .their intellectual capital inefficiency results in a decrease in their

financial performance consequently, the desired levels of financial performance are never achieved.

Both tangible and intangible assets are perceived as potential strategic assets (Riahi & Belkaoui, 2003). This qualification of intellectual capital as a strategic asset rests on a potential link between intellectual capital on one hand and the firm performance on the other hand (Seethanraju, 2000). Furthermore many scholars now argue that in comparison with the tangible resources the intellectual capital or intangible resources are more likely to be the key resources for many enterprises which help them in acquiring the required competitive advantages or to

ensure market dominance (Brennan & Connell, 2000; Mann, 2004). According to Patton (2007)

1.2 Statement of Research problem.

Various research findings have illustrated that intangible like, knowledge, information, information technology are prime resources in the knowledge economy. Companies have moved away from the industrial age to information but they are still notable to identify measure and manage intellectual capital in their organizations. To create value for the organization, intellectual capital needs to be identified, measured and valued and should be attached to the strategy and goals of the company. However, it is difficult to measure since it is intangible and non-physical in nature. In the knowledge economy companies

are still following the traditional accounting model, which is invented for companies operating in an industrial economy. Financial statements of the companies prepared following traditional accounting model cover most of the physical and financial assets of the organizations but may ignore intangible assets. But the growing gap between the market value and book value of the companies has motivated the researchers to examine the reason behind it. This gap may be largely justified due to the absence of intangible assets from financial statements.

Competition at a cross-border scale compels domestic companies to adjust their competitive position by achieving sustainable financial performance. In the knowledge-intensive industries Intellectual Capital (IC) generally represents the critical resource in the value creation process. Traditional measures of company performance, which are based on conventional accounting principles, are unsuitable in the new economy. But such measures are the main basis of decision making. The conventional performance measurement techniques may lead managers, investors, and other stakeholders to make inappropriate decisions when companies have large portion of their investment in intangible assets. Therefore, it needs to investigate if conventional financial performance measurement techniques are influenced by intellectual capital performance? However it can be argued that it is difficult to quantify the value of the intangible assets and it is also more problematic to consider any return from these assets.

The present study is a modest attempt to examine whether or not the intellectual capital performance are related with corporate financial performance of NSE(Nigeria stock Exchange) in Nigeria.

1.3 RESEARCH QUESTION

From the statement of research problem and the objectives of the study, the following research questions will guide the research work:

1. To what extent does the human capital efficiency affect the financial performance in Nigeria?
2. To what extent does the structural capital efficiency affect the financial performance in Nigeria?
3. To what extent does the Capital employed efficiency affect the financial performance in Nigeria?

1.4 Objective of the study

The broad objective of this research is to evaluate the effect of intellectual capital on financial performance of firm which includes;

1. To examine the effect of human capital efficiency on return of asset of firms (Nigeria Stock Exchange)

2. To evaluate the effect of Structural capital efficiency on return on asset of firms (Nigeria stock Exchange)

3. To examine the effect of capital employed efficiency on return on asset of firms (Nigeria Stock Exchange)

1.5 Statement of Research hypotheses

The following hypotheses have been formulated for this research.

1. Human capital efficiency has no significant effect on return on asset of selected firms in Nigeria.

2. Structural capital efficiency has no significant effect on return on asset of selected firms in Nigeria.

3. Capital employed efficiency has no effect on return asset of selected firms in Nigeria.

1.6 Significances of the Study.

The study of intellectual capital and firm's financial performance in Nigeria holds a significant value of various stakeholders including business, policy maker, and researcher. Secondly, this provide insight into providing business strategies, fostering innovation and enhancing overall economic development in the country. : There is no significant relationship between a stock Exchange physical capital and its financial performance.

1.7 Scope of Study.

The scope of study on intellectual capital and firm's financial performance in Nigeria could include analyzing the impact of intellectual capital component on financial indicators, exploring how industry specific factors influence this relationship, and assessing role of in managing intellectual capital for improved financial outcome. Additionally, considering the unique economic and regulatory environment in Nigeria would be crucial for a comprehensive understanding.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter is divided into three broad areas; the Conceptual review which highlights some key elements in the study, the theoretical frame work which deals with some theories on intellectual capital and Empirical review which deals with past studies on intellectual capital.

2.1 CONCEPTUAL REVIEW

2.1.1 Intellectual Capital Concept

Malone (1997) and Edvinson (2000) categorised IC into customer/relational, structural, and human capital. Other studies (Kamath, 2010; Ahangar, 2011) have also adopted these components to measure IC. The intangible-based view (IBV) of capital, influenced by the contributions of the Intellectual Capital movement by Edvinsson and Malone (1997), combines an organisation's Resource-Based and Knowledge-based views. The IBV distinguishes between human and non-human resources and considers an organisation's tangible and intangible resources (Stam, 2006).

Akorede, M. (2023) and Inyada's (2018) study established that IC is a major determinant of financial performance. The finding is consistent with the study of Onyekwelu *et al.* (2017) and Orugun and Aduku (2017), who also found a significant contribution of IC to

firm performance. Similarly, Ulum *et al.* (2020) and Ngoc and Duc (2020) utilised the value-added intellectual coefficient as a metric for IC and concluded that it positively and substantially impacts organisational performance. Similarly, Apiti *et al.* (2017) emphasised the nexus between IC and financial performance, highlighting the importance of effectively managing IC to enhance reported financial outcomes. Toorchia *et al.* (2015) provided insights into how practitioners and organisations align management accounting approaches with the level of IC within a company, aiming to maximise the benefits of knowledge-related resources.

The study by Xu and Liu (2020) found that IC is as important to the financial performance of firms as physical capital. However, Firer and Williams (2003) could not establish the significance of IC on firm performance. Similar findings were reported by Suleiman *et al.* (2021), Filipe and Zélia (2017), Nikmah and Aida (2016), and Pongpearchan (2016), all of whom found that efficient management of IC had a positive and significant effect on the financial performance of organisations, like physical assets. Ewereoke (2018) and Kwarbai and Akinpelu (2016) relied on data from Nigerian banks to discover that not all IC components influence firms' financial performance. However, they concluded that IC is equally important to the financial performance of banks and should be given more attention due to its potential to improve their financial performance further. The studies by Al Momani *et al.* (2020) and Kwarbai and Akinpelu (2016) established that while IC is a major driver of firm performance, the components of IC do not have an exact level of influence on firm performance. Ahmed *et al.* (2019), Ayse *et*

al. (2019), and Oyedokun and Saidu (2018) utilised the VAIC model in measuring IC and their findings indicated that innovation capital efficiency directly affects firms' productivity. Additionally, the efficiency components of IC have a moderating effect on the relationship between the major components of IC.

Findings on the role of IC on firm performance have been mixed. Saarce *et al.* (2019) and Sharma (2018) found that while some components of IC, such as Human Capital, had a positive and significant impact on firm performance, others, like structural and relational capital, had no effect. They attributed these findings to industry-specific factors, suggesting that the role of IC may vary across different industries. Iwamoto and Suzuki (2019) emphasised the importance of human capital as a determinant of firm financial performance, noting that firms increasingly recognise its significance. They also highlighted the increasing disclosure of human resources, indicating a growing focus on providing comprehensive and meaningful information. Khan (2018) and Xu and Wang (2018) applied the Pulic model to examine the role of IC in firm performance and found that IC is just as crucial as physical capital for organisations.

The significance of IC to the performance of firms cannot be overemphasised. This is because of the importance of creativity and innovations, especially in the ever-changing business environment and the need to stay abreast with competitors (Nikmah & Aida, 2016). To the extent of the literature search, not much has been done on IC in relation to the financial performance of firms in Nigeria. While there are few studies on IC studies in

Nigeria (Orugun & Aduku, 2017; Onyekwelu *et al.*, 2017; Inyada, 2018; Oyedokun & Saidu, 2018), these studies do not take into consideration the interaction between the variables of IC (Capital Employed Efficiency, Human Capital Efficiency and Structural Capital Efficiency). Also, special emphasis has not been given to the FBT subsector of the manufacturing sector in Nigeria. Similarly, this study also controls for the influence of external factors on a firm's financial performance by incorporating inflation into the model.

Several studies have been reviewed. While some do not see the nexus between IC and firm performance, others reported a mixed finding. However, a greater proportion of the literature agreed that IC positively and significantly affects firm performance. Some even established that the IC is as important to the firm performance as physical and tangible assets. Consequently, this study hypothesises that IC can affect the performance of FBT corporations positively and significantly in Nigeria.

The phrase intellectual capital was first proposed by Galbraith in 1969 and popularized by Stewart in fortune magazine where he tried to introduce it as the amount of employees' knowledge and ability which could strengthen the company's competitiveness. Initially, the difference between book value and market value of companies was considered as intellectual capital. Researchers from different background have tried to define specific concepts of intellectual capital in their own words. (Karmath, 2012).

The term intellectual capital includes inventions, ideas, general knowledge, design approaches, computer programmes and publication. Intellectual capital includes all non-tangible or non-physical assets and resources of an organization, as well as its practices, patents and the implicit knowledge of its members and their network of partners and contracts (Shincon, 2005). Stewart (2020) defines it as “Packaged useful knowledge”. Sullivan (2015) saw it knowledge that can be converted into profit. Roos and Roos (2021) state that intellectual capital is sum of knowledge of its members and practical translation of this knowledge into brands, trademarks and processes. Edvinson and Malone (1997) define it as the possession of knowledge, applied experiences, organizational technology, customer’s relations and professional skills that provide a company with a competitive edge in the market.

Nahapiet and Ghosh Al (2015) define intellectual capital as sum of knowledge and knowing capabilities that can be utilized to give a competitive advantage. Bontis (2008) saw intellectual capital as a collective knowledge embedded in people, organizational routines and network of relationships. Congruent with the above definitions, Youndt and Snell (2004) in their analysis of intellectual capital characteristics, revealed a consensus among scholars that intellectual capital is a multi-dimensional concept that resides at individual level, network and organizations. Whilst a common definition has not been agreed on, Bontis (2008) and Marr, Schuman and Neely (2003) note that scholars converge on three categories of intellectual capital. Human capital, structural capital and customer (Relational)capital.

The human capital efficiency is calculated as Value Added divide by Human Capital. Structural capital efficiency is Value Added divide by value of Structural Capital. Capital employed efficiency is Value Added divided by Value of Capital employed. It should be noted that VAIC is a composite sum of two main indicators: Capital Employed Efficiency (CEE) and Intellectual Capital Efficiency (ICE). ICE consists of two other variables: Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE)

2.1.2 ELEMENT OF INTELLECTUAL CAPITAL:

The most popular models for classifying intellectual capital is the Saint- Onge model developed in the early 1990 (Onge, 1996). It divided intellectual capital into three parts; Human capital, structural capital and customer capital. A slight variant of this model developed by Bontis (2008) re-states customer capital as relational capital to include relationship with suppliers. (Bontis, 2011; Edvinsson & Malone, 1997; Stewart, 2020).

Bontis (1998) assert that intellectual capital resides at individual (human capital) network (customer capital) and organization level (structural capital) Youndt *et al* (2004) contended that development of theoretically based sub categories of intellectual capital is necessary in advancing ability to operationalize and understand the concept. According to Bontis (1996) Intellectual capital, involves structural capital and Human capital and he introduced relation capital as an example of customer capital. Similarly, Edvinsson and Malone (1997) and Stewart (2020) categorization consist of human capital, structural capital and customer capital.

2.1.2.1 Human Capital

Human Capital is recognized as the largest and the most important intangible asset in an organization. Ultimately, it provides the goods or services which customers require or the solution to their problems. It includes the collective knowledge, competency, experience, skills and talents of people within an organization, it also includes an organization's creative capacity and its ability to be innovative. Although investment in human capital is growing, there is still no standard measure of its effectiveness in companies' balance sheet (Amitava, 2020).

It is very difficult to define human capital precisely because it depends on the nature of the job and firm as well as the situational factors that relate to the job (Appuhami, 2017). The root of human capital can be found in the smith's economics theories, where he defined contribution of human capital as important to the organization performance and to the economic growth of the country as well. Several studies like (Appuhami, 2007; Aston, 2005; Bontis, 1999; Bozbura, 2004) consider human capital as the stock of skills and knowledge embodied in the ability to perform labour so as to produce economic values. Hence, it can be described as the skills and knowledge gained by a worker through education and experience (Sullivan, 2000). Aston (2005) corroborating the above definition posits that human capital consists of personal attributes such as knowledge, skills and expertise. Bozbuna (2004) has suggested that human capital can be recognized as an accretion of general knowledge acquired by employees during their work tenure,

leadership skills, the ability to take risks while performing the job and making decision and the ability to solve problems.

2.1.2.2 STRUCTURAL CAPITAL

This is the supportive infrastructure for human capital. It is the capital which remains in the factory or office when the employees leave at the end of the day. It includes organizational ability, processes, data and patents, unlike human capital; it is company's property and can be traded, reproduced and shared by, and within the organization (Ekwe, 2020). From the organizational perspective, structural capital includes all non-human resource of knowledge. Structural capital comprises of enabling structure that allow the organization to exploit intellectual (Muhamad, 2006). Aston (2005) describes structural capital as comprising of various types of internal value drivers of a firm including process, routing, data base, customer files, work literature or manuals. Organizational capital following Sveiby (2014) Guthrie and Petty (2000) consists of internal capital, which includes intellectual property, management philosophy, corporate culture, management processes, information and networking system and financial relations. As structural capital results from outputs, products or systems created by the firm over time they are not included within an individual (Aston,2005).Hence unlike human capital, structural capital remains within an organization even after employees leave the organization (Muhammad & Aisa, 2007).

2.1.2.3. CAPITAL EMPLOYED

It is also known as funds employed, refers to the total amount of investment a company uses to function and generate profits. It's a metric that provides insight into a company's financial health and efficiency of using its capital.

There are two main ways to look at capital employed: Capital employed is often used in conjunction with the Return on Capital Employed (ROCE) ratio. ROCE measures how much profit a company generates for every dollar of capital it employs. This helps analysts understand how effectively a company is using its resources to create profit.

Capital employed on the other hand to the amount of capital investment a business uses to operate and provides an indication of how a company is investing its money. Capital Employed = Fixed Assets + Working Capital

ELEMENT OR COMPONENT OF CAPITAL EMPLOYED

The main components of capital employed are:

(1)Fixed Assets (Non-Current Assets): These are long-term investments in tangible assets crucial for the company's core operations. They depreciate in value over time and have a lifespan of several years. Examples include property, plant, and equipment (PP&E), land, and buildings.

And it's also define as assets that are purchased for long-term use and are vital to the operations of the company. Examples are property, plant, and equipment (PP&E).

(2) Working Capital is the capital available for daily operations and is calculated as current assets minus current liabilities.

Working capital represents the capital used for day-to-day operations. It's calculated as current assets (cash, inventory, receivables) minus current liabilities (short-term debts like accounts payable). Working capital ensures a company has enough resources to cover its ongoing expenses and maintain smooth operations.

2.1.6 INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE:

The impact of intellectual capital on financial performance has not been investigated thoroughly on an empirical level. On a theoretical level, distinguished authors argue that intellectual capital is the value driver of all companies (Stewart, 1997). That knowledge management is a core organizational issue (Nonaka & Takeuchi, 1995) and that organizational knowledge is the crux of every sustainable competitive advantage (Bontis, 1999). On the other hand empirical evidence are inconclusive and far from a solid scientific consensus. The study of Riahi-Belkaou (2003) finds a positive relationship between intellectual capital and financial performance, while Bontis *et al* (2000) conclude that regardless of industry, the development of structural capital has a positive impact on business performance, on the other hand Firer and Williams (2003) examined the relationship between Intellectual capital and traditional measures of firm performance (Return on Asset and return on equity) and fail to find out any relationship, while Chan *et al* (2005) using the same methodology conclude that intellectual capital has significant

impact on profitability. The following variables that will be used to proxy financial performance in the present study are as follows

(i) Asset Turnover (ATO): it is the ratio of total turnover to total asset. It indicates the company's productivity as measured by the asset-turnover ratio.

$$\text{ATO} = \frac{\text{Total Turnover}}{\text{Total Asset}}$$

(ii) Company Process: This includes the totality of the internal operations the company undertakes to meet customers' expectations and the technology used in value creation. The following indicators as suggested by Edvinsson and Malone (1997) indicate the process focus of the organization. Company process is = $\frac{\text{Administrative expenses}}{\text{Operating Asset}}$.

The primary goal of a firm should be to maximize the value of prices of a firm's stock. The success or failure of management decision can be evaluated to the light of the impact of firm's stock price (Remi, 2005). The firm stock price has direct purview to the management efficiency which is one of the signals of firm's performance.

2.1.7 INTELLECTUAL CAPITAL AND MARKET VALUE:

According to the traditional accounting practices the book value of an organization is solely calculated from its financial statements. The simplistic method of such a calculation includes subtracting liabilities from the firm's total assets. As a result conservative accounting practices failed to account on the most important intangible

assets of every organization (Sveiby, 2000). The gradual introduction of the international accounting standards (IAS) in nearly every developed and developing country (Except for the USA which is expected to implement the IAS in the next five years) forced companies to calculate assets at their real market value, while giving full definitions and credit to all intangible.(International Financial Reporting Standard (IFRS), 2008).

Despite that the inability of most companies to comply with IAS and the significant cost of such an implementation, still deteriorate the recognition of the intangible assets of every organization (Judge & Pinsker, 2010). The result of such a short seeing is a growing divergence between the market and book value of organizations. In other words, the market estimates the value of companies with high intangible assets to be significantly higher than the calculated book value (Chen *et al* 2005, Firer and Williams, 2003; Riahi- Balkooui, 2003).

Broking (1962) finds that 62% of the company value was represented by its physical capital by 1992 the percentage had declined to 38% and continues to fall. Other researchers show that in 1995 over 75% of the value of companies from health care and personal services industries is attributable to its intangible or intellectual capital (Amiteva, 2014) .These increasing gaps between market value and book value have drawn research attention among researchers to find contribution of intellectual capital to the organizational financial performance.

In this study the difference between market value and book value of the company is used to measure shareholders value creation in capital market and market to book ratio is used as a measure of shareholders value creation of sample companies. It is ratio of market value of common stock and book value of total shareholders' equity.

M/B Ratio = Market Value of common stocks / Book value of shareholder equity

2.2 THEORITICAL FRAMEWORK

2.2.1 Resource Based View of the Firm (RBV)

This was introduced by Wemerfelt (1984) and refined by Banney (1991) central to the proposition of RBV is that a firm represents a collection of unique resources and capabilities that provide basis of sustained competitive advantage so long as they are valuable, rare, difficult to imitate and non-substitutable (VRIN) (Barney, 1991). The theory presumes that firms are a bundle of heterogeneous, capabilities that are imperfectly immobile across firms. According to this view, firm performance can be attributed to unique resource rather than industry structure, a proposition supported by strategy literature (Gathrie, Datha & Wright, 2004). Hall (1992) and Grant (1996) classified resources into tangible assets, intangible assets and human resources with human being characterized as the most productive asset. Corporate reputation, corporate culture and employees Know-how were characterized as more influential than tangible assets as they are likely to meet Baney's (1991) four conditions outline. Competitive

advantage can be attributed to unique resources particularly intangible ones when they are combined or integrated (Barney, 1999). Knowledge assets are not consumed when they are applied to solving organizational problems, on the contrary a knowledge asset's value generally maintained and enlarged by its application, while conventional assets must be depreciated or replaced. (Spender, 2002). RBV explains the internal conditions under which competitive advantage for firms is achieved and how the advantage can be sustained over time based on their bundles of resources and capabilities. Central proposition of the RBV is that firms that possess and control resources that have the attribute of valuable and rare would obtain competitive advantage and improved performance. In order for the firms to achieve sustained performance and competitive advantage over time resources must also be inimitable and non-substitutable. These attributes are the fundamental drivers of performance and competitive advantage (Barney, 1991).

Barney (1991) classified resources into physical capital, human capital and organizational capital. Firms that obtained competitive or sustained competitive advantage implement strategies not concurrently pursued in their existing or potential competitive firms. Intangible assets are perceived as more lasting or driving competitive advantage (Peteraf, 1993). As they are extremely difficult for competitors to copy (Galbreath, 2005). Capabilities are the organizational ability to assemble, integrate and deploy the resources. Resources do not contribute to firm competitive advantage unless they are utilized such as to enhance knowledge or to produce innovation (Grant, 1996). While resources are

owned or control by firms, capabilities are used to integrate, develop and transform resources into valuable solutions for customers. The Resource Based View is appropriate in guiding this research as it focuses on firms specific resources that may when combined innovatively offer firms sustainable competitive advantage.

In support of this Beeker and Grant (1996) and Wright *et al* (2001) note that a synergetic effect rather than a set of independent practices leads to competitive advantage. This argument discredits the assumption that reliance on a single element like human capital which has been overly emphasized in literature as a source of competitive advantage. RBV is governed by general belief that resources interaction should be more valuable than the sum of its parts. (Riabi- Belkaouli (2003) Cabinita and Bontis (2008) have provided empirical support for the RBV Theory. It is on this theory which is more relevant to this study that this present work is anchored on.

2.3 Empirical Review

At present, knowledge, information and information technology, whether embodied in human resources or organizational structure, have become primary production factors. Manufacturing or producing companies use these vital assets to gain superior competitive advantage. But in service companies belonging to sector like Information Technology (IT) banking and finance, pharmaceuticals etc., intellectual resources are the main basis of enhancing sales revenue and profitability also. They use intellectual resource as a capital to their production system. According to (bontis 1998) enterprises, which are able

to manage their intellectual capital, will achieve stronger competitive advantage than other competing enterprises. Brennem and Connell (2000) claim that intellectual capital management plays an important role in achieving long-run business performance of an enterprises

The empirical works related to this study are reviewed based on the objectives of the study. productivity and market value of a firm by employing the Value Added Intellectual Coefficient (VAIC) technique reviewing the intellectual capital components, he suggests measure that are of importance for improving a firms efficiency and resources in the united kingdom. In an empirical study of intellectual capital performance and its impact on the financial performance of Pakistani insurance companies

Rehman, Ilyas and Rehman (2011) found that human capital efficiency (HCE) plays a significant role in intellectual capital performance of both life and non-life insurance sectors of Pakistan. They conclude that an insurance company with a high HCE and SCE naturally will have a better financial performance. Using the VAIC model, Jovornike, Tekavlie and Mac (2012) study more than 2000 Slovenian companies between 1995 and 2008 and found a high degree of correspondence between the improvement in the rank of a company's intellectual capital investment efficiency and the improvement in rank of its financial performance in per group

Clarke, Seng and Whiting (2010) using Public's VAIC examine the effect of intellectual capital on firm's performance in Australian listed companies between 2004 and 2008.

The results suggest that there is a direct relationship between intellectual capital and the performance of Australian publicly listed firms, particularly with capital employed efficiency and to lesser extent, human capital efficiency.

Using the balanced score card (BSC) strategy Bose and Keith (2007) examine the development of a frame work for the measurement of an organizations performance. Measuring performance in relation to a major Australian company, they studied on the newly appointed CEO of the fosters" Brewing Group reversed a decline in performance by adopting, among other initiative, the balance scorecard approach to management and turned the organizations fortunes around.

2.3.2 EMPIRICAL REVIEW BASED ON OBJECTIVE:

Chan (2017) have carried out a study in companies enlisted in the Hongkong Stock Exchanged and it reveals that there is no significant association between intellectual capital and corporate performance using ATO and ROE. The result shows that physical capital is the most significant factor affecting profitability, productivity and market valuation of the firms.

Chu, Chan and wong (2022) examine the association of intellectual capital with financial performance of companies operating in Hongkong Stock Exchange during 2005-2008. VAIC methodology was applied to measure intellectual capital and Asset Turnover. The result found no strong association between VAIC and ATO.

2.3.3 Empirical Review Based on Objectives 4 and 5 Using Employee Productivity and Company Process Proxies for Non-Financial Performance.

Ahangar (2012) study the relation between IC and financial performance. An empirical investigation in Iranian companies between 1980 -2009. The results showed that the relationship between the performance of a company IC and profitability, employee productivity and growth in sales are informative. In addition suggests that the performance of a Company intellectual capital can explain profitability and productivity.

Chen *et al* (2012) conduct an empirical investigation on the relationship between intellectual capital, market value and financial performance. They used a large sample of Taiwanese listed Companies and utilized Pulic (2000) VAIC. Their study underlined the importance of intellectual capital on the enhancement of firm profitability and revenue growth. The empirical results proved that;

1. Investors value higher, companies with better IC efficiency and
2. Companies with better IC efficiency obtain a higher degree of profitability and revenue growth in the current and following years OECD (2006), found that IC has played a significant role, as much as tangible capital, in improving labour productively in the USA from 1995 to 2003
3. Chen Cheng and Hwang (2005) analyze the relationship between VAIC and market to Book value and also with corporate performance (ROA, growth in revenues and employee productivity) for all firms listed on the Taiwan stock

exchange (TSE) during 1997-2002. The final sample includes 4254 firms' years. They argue that Pulic definition of structural capital neglects innovative capital. They have included research and development (R&D) expenditure as a part of structural capital in the regression model and this has the explanatory power of model. They report that investors pay different values to three components of VAIC. Finally, their study reports a positive impact of intellectual capital on sample firms' market value and financial performance.

Diez, Majda, Begona and Alice (2010) have tried to examine the influence of intellectual capital (represented by human capital and structural capital) on the creation of business value of Spanish firms having 25 employees or more. The explanatory analysis confirms the positive relationship between the use of human and structural capital and value creation measured by sales growth.

The study however, finds no significant relationship among human capital structural capital and dependent variables like return on assets and productivity.

2.3.4 Empirical Review Based on Objective 6 Using Market Value as Proxy for Firms Financial Performance

Tseng and Goo (2005) prove that the role of intellectual capital in enhancing corporate value of High-tech companies is more than for the non-high-tech companies. Innovation and relationship capital impact directly and positively to corporate value measured by

market-to-book value. Ghose and Wu (2007) use both secondary and survey data to examine the effect on intellectual capital on firm value measured by market to Book ratio and Tobin's Q. Result show that intellectual capital explains the financial performance of the sample companies.

Cheuck, Wong and Kok (2006) examine the relationship using data from 52 public finance companies from the Bursa Malaysia. Their study examines the market value which is denoted by share prices. The results show that the correlation between VAIC and share price is negative. Maheram, Muhammad and Ishmael (2009) examine the efficiency level of the trend of IC among 18 financial companies for the year 2002-2006 they have found that firms' market value have been created more by capital employed (Physical and financial) rather than intellectual capital. However, there is no evidence of IC efficiency by years. In terms of relationship between VAIC and their companies, IC has positive and significant relationship with Human capital and Structural capital but not with the capital employed.

Bramhandker, Erickson and Applebee (2007) have study the relationship of intellectual capital with the organization's financial performance, using a sample of 139 firms in the drug industry of USA. Samples companies have been sorted according to intellectual capital value calculated by differentiating book value from market capitalization. From the study results it is revealed that firms with the highest level of intangible assets

perform better than those with lower levels. The high lever firms are seen to have earned significantly better returns and significantly less variability in stock price.

Wang (2008) investigates the relationship between intellectual capital and market value of United States S & P 500 publicly traded companies. The researcher has used secondary data of 893 United States electronic companies for the study. Multiple Linear regression techniques have been used to analyzed the data. The results reveal that the intellectual capital had strong impact on the competitive advantage and market capitalization of the firm.

Asadi (2012) investigates the relationship between intellectual capital and value creation criteria of 59 companies listed on Tehran Stock Exchange for a period of five years. The results indicate that there are significant relationship between intellectual capital and economic value added, cash value added and market value added. Ghorbari, Shahagy, Mosari and Avari (2010) study the effect of intellectual capital on financial performance in Iranian Pharmaceutical industry between 2004 and 2008. The result showed no reason for the attribution of changes in market values of firms to performance of intellectual capital and it seemed that pharmaceutical market of Iran still show more sensitivity to material capital than intellectual capital. Firer and Williams (2020) utilized the VAIC approach to measure the relationship between intellectual capital and traditional measures of corporate performance. They used a sample of 75 South African public traded companies but the empirical results failed to support any relationship between the three

value added efficiency components and the three dependent variables (profitability, productivity and market value). The findings reveal that South African companies depend mostly on their tangible resources, pay the least important to their structural capital. While on the other hand the market seems to react negatively to firms that concentrated solely on the enhancement of human assets.

Samiloghu (2006) try to determine whether a significant relationship between VAIC and market to book value ratios really exist. The author used data from the financial statements of banks listed on the Istanbul stock market over the years 1998 to 2011. The results demonstrate that there was no significant relationship between the depended variable (MV/BV) and the independent variables VAIC and its three components.

Shiu (2006) investigates 80 Taiwan technology firms, found significant positive correlations between VAIC, profitability and market valuation and a negative correlation with productivity Chen *et al* (2005) have tried to examine the relationship between the value creation efficiency and firm's market valuation and financial performance. They have found that the intellectual capital has a positive influence on the market value and the financial performance.

Nagi (2005) investigates empirically the value creation efficiency of intellectual capital, market valuation and financial performance of 22 Bangladeshi banks listed on Dhaka Stock Exchange. The results support the positive role of IC in creating corporate value.

Appuhami (2007) investigates the impact of value creation efficiency of IC on investors' capital gain on shares of listed companies in Thailand Stock Exchange. The empirical research finds that firms' intellectual capital has a significant positive relationship with its investor's capital gain on shares.

2.3.5 EMPIRICAL REVIEW BASED ON OTHER CRITERIA:

Brymer, Molloy and Gilbert (2014) highlight input, output and process contingencies as a pipeline hiring mechanism adopted by firms in the engagement of human capital to the modern economy. Pipelines, according to the authors, refer to repeated inter organizational hiring system and practice which firms use to differentially acquire and accumulate intellectual capital risks particularly in the knowledge based firms. In another study which evaluated the role of intellectual capital to the university efficiency system, efficiency system at Azad Islamic University in Iran; using synthetic model of genetic algorithm and decision trees. Modaresi, Razaee and Javid (2012) observe that the development of intellectual capital affects university efficiency significantly. To understand how the measurement of intellectual capital can favour intellectual capital mobilization, Chiucchi (2003) examines the role of those who design and implement intellectual capital practices. Using the Kolb's experimental learning theory model, she opines that actors must complete and experimental learning cycles so as to enable them appreciate fully the contribution of intellectual in their organizations.

2.3.6 EMPIRICAL REVIEW BASED ON STUDIES IN NIGERIA.

Despite the prominence given to the efforts of the workforce in the annual financial statements of companies in Nigeria, the measurement of intellectual capital in Nigeria is very shallow. It is true that human capital is acknowledged by the treatments of companies especially if the chairman's statement in the annual reports, yet such knowledge are not measured or articulated in the company's financial reports. This means that the value of firms in Nigeria is under reported. In Nigeria, studies on the measurement of intellectual capital are currently not detailed. Onafalajo Eke and Akinlabi (2011) observe though that accounting in insurance companies using the new IFRS recommendation is relevant to the Nigerian Financial environment but argue that the application of IFRS through the use of observable and unobservable market inputs as well as the experience variance of operators may be difficult in the short run but achievable in the long run. They identified that the inability of the workforce to uphold good ethical practices in insurance firms in Nigeria do negatively affect the practice of insurance. Epetimelim and Ekundago (2011) observe that intellectual capital as a vital corporate asset, will net away unless companies do something to stop the brain drain and to retain critical knowledge. They opined that the survival of the insurance companies in Nigerian is dependent upon the resolve of the workforce to eliminate unethical practices which are resorted to avoiding liability under insurance policies. Oneyekwelu and Ubesie (2013) study on pharmaceutical companies in Nigeria, analyzed the effect of intellectual capital on corporate valuation from (2004-2013) using market to book value ratio (MV/BV) and earnings per share (EPS) adopting

Pulic (2000) VAIC, the results show that human capital efficiency has a positive and significant effect on market/book value. Structural capital has a negative and insignificant effect on EPS. While Ekwe (2012) found out a statistically strong relationship between the components of intellectual capital and market to book value M/BV ratio of banks listed on Nigeria Stock Exchange.

Yahaya (2006) using the quantitative measure published by the Institute of Intellectual Capital Research and approved by the Saratoga Institute measured the impact of investment in human training and development on employees effectiveness in Nigerian Banks between 2001 and 2005. Her study confirms that an assessment of the human resource effectiveness of 3 commercial banks (Zenith, First bank and Union bank) showed that Zenith bank with the best human resources management and accounting practice perfomed better than first bank and Union bank

SUMMARY OF REVIEWED LITERATURE

A critical assessment of the materials reviewed in this study reveals that over four decades ago, intellectual capital research, became the focus of accounting research. The phrase intellectual capital was first proposed by Galbraith (1969) and popularized by Stewart (1997) in fortune magazine. The increasing gaps between market value and book value have drawn attention among researchers to find contribution of intellectual capital to the organization financial performance. The justification or otherwise for the place of knowledge otherwise called intellectual capital in driving market value, and indeed other

corporate value indices has constituted a challenging academic problem in the past few decades. Some scholars have described intellectual capital as being a key driver of corporate value enhancement (Sullivan, 2000; Firer & William. 2003; Amitava, 2014).

In contrast to the above submission some empirical studies could not establish any statistical relationship between intellectual capital and firms value (Zou & Huen, 2011). Great research work has been carried out in advanced economics, studies like Bontis *et al* (2000) ZLang *et al* (2006), Riahi- Belkoui (2003) and others as sported in the reviewed literature. In Nigeria the few works sported which did not take a holistic approach in determining the effect of intellectual capital on firms listed on Nigeria Stock Exchange are: Ekwe (2012) who studied on few selected banks, Anuonye (2015) who investigated on the insurance sector and Onyekwelu (2013) who carried a study on the pharmaceutical sector of the Nigeria economy. Studies generally find a positive relationship between a firm's intellectual capital (IC) and its financial performance in Nigeria. This applies to various financial metrics, such as Return on Equity (ROE) and Return on Assets (ROA). Here's a breakdown of key points:

Importance of IC: Traditional assets like land and equipment are less crucial for competitive advantage compared to intangible assets like employee knowledge and innovation (intellectual capital).

Measuring IC: The Value Added Intellectual Coefficient (VAIC) model is a common tool to assess the impact of human capital, structural capital, and customer capital on a firm's performance.

PROFITABILITY RATIOS

1. **Return on Assets (ROA):** Measures profit relative to total assets, indicating how efficiently a company uses its assets to generate profit.
2. **Return on Equity (ROE):** Measures profit relative to shareholder equity, showing how much profit is generated per dollar of shareholder investment.
3. **Net Profit Margin:** Shows the percentage of revenue remaining as profit after all expenses.

EFFICIENCY RATIOS

1. **Expense Ratio:** Measures the cost of operation as a percentage of revenue. A lower ratio indicates better expense management.
2. **Asset Turnover Ratio:** Measures how effectively a company uses its assets to generate sales.

GROWTH RATIOS

1. **Revenue Growth Rate:** The annual percentage increase in revenue.
2. **Earnings per Share (EPS) Growth Rate:** The annual percentage increase in earnings per share.

Intellectual capital (independent variable) is a broad concept encompassing intangible assets that contribute to a company's competitive advantage. It can be categorized into three main areas:

- a. **Human Capital:** The knowledge, skills, and experience of employees.
- b. **Structural Capital:** Processes, systems, and infrastructure that support core operations. On the other hand it refers to what an organization can contribute to use even after its personnel cease working there.
- c. **Customer Capital (Relational capital):** Brand reputation, customer loyalty, and relationships share.

2.4 RESEARCH GAP

From the summary of the reviewed literatures and to the best of my knowledge it is clear that researchers in Nigeria have not attempted to carry out an empirical study of intellectual capital on all the firms listed on Nigeria Stock Exchange . The few sported decomposed the Stock Exchange Market into sectors. Ekwe (2012) based his research on the banking sector. Anuonye (2015) considered the insurance sector while Onyekwelu (2013) investigates the pharmaceutical sector of the Nigerian economy. Hence this present study is a modest attempt to close the gap by studying all the sectors and firms listed on Nigeria Stock Exchange.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

Having extensively reviewed literature related to this study, it is important at this point to turn to techniques and procedure through which relevant results will be obtained. This chapter will expose the design of the study, population of study, samples and sampling techniques, sources of data, method of data analysis and model specification.

3.1 RESEARCH DESIGN

The study adopted ex-post facto research design in order to establish the extent to which intellectual capital affects firm's performances. In such research design, the research is undertaken after the events have taken place and the (Historic) data are already in existence it is a systematic empirical study in which the researcher does not in any where control or manipulate independent variable because the situation for study already exists or has already taken place (Asika, 2018). An ex-post facto research determines the cause – effect relationship among variables (Onwumere, 2016). This study is interested in determining the effect of intellectual capital on firms' performance.

3.2 POPULATION OF THE STUDY

The study population consists of all the 2,266 listed companies on the Nigeria Stock Exchange. (The Nigerian Stock Exchange Fact Book, 2023)

3.3 SAMPLE AND SAMPLING TECHNIQUE

The study focused on 2,266 companies listed on the Nigeria stock exchange during the period of Dec 31st 2023. Sample size was reduced to 76 companies out of 2,266 because of, Merger and acquisition, distress and delisting of some companies on the Nigerian Stock Exchange Market. Panel data will be used to overcome the problems associated with missing data (Negash, 2005). The panel data of 40 companies over a period of 21 years will result to 600 observations.

The study employed multi-phase sample method. In multi-phase sampling method some of the same different sampling units are employed at the different phases of sampling. Multi-phase sampling is a sampling method in which certain items of information are drawn from the whole unit of a sample and certain other items of information are taken from the subsample (Philip and felted, 2020)

We also excluded companies which have access for the first time during the selected period. In details 45 companies excluding 5 due to their two short listing periods were selected.

3.3 SOURCES OF DATA

This study will apply secondary data which will include data for financial performance proxy by Return on Asset, Return on Equity, Asset Turnover, Company Process, Employee Productivity will be collected from published annual reports of the respective

firms while market related data will be collected from annual reports and Nigeria Stock Exchange.

3.4 METHOD OF DATA ANALYSIS

The study employed descriptive and inferential statistics for analysis. Descriptive statistics, including measures such as mean, standard deviation, and coefficient of variation, were used to present the data. The unbalanced panel dataset was analysed using static panel data analysis for inferential statistics. The most appropriate estimation method was determined using the Breusch and Pagan Lagrangian Multiplier (BP-LM) test, which compared the Pooled Ordinary Least Square (OLS) and fixed/random effects models. If the null hypothesis was rejected, indicating fixed effects, the model was estimated using OLS. If the null hypothesis was accepted, indicating random effects, the model was estimated using Generalized Least Squares (GLS). This allowed for generalisation of the population under the assumption that the sample represents the underlying population (Baltagi, 1995).

3.5 MODEL SPECIFICATION

A lot of models have been developed by intellectual capital researchers as reviewed in chapter two of this study. The present work is based on Pulic (2022) model, the Value Added Intellectual Co-efficient (VAIC) model transformed into an ordinary least square (OLS) regression approach. VAIC was developed basically as an analytical tool designed

to effectively monitor and evaluate the efficiency of value added by a company's total resources among each resource's components (Pulic 2022).

A modified Pulic (1998) regression model was adopted for the study. The original model is stated as: $VAIC = (CEE) + (HCE) + (SCE)$.

Where: CEE = capital employed efficiency

HCE = Human Capital Efficiency

SCE = Structural Capital Efficiency

VA = Total output – Total input

The term "total output" represents an organisation's overall revenue in a fiscal year, while "total input" includes operating expenses excluding employee-related costs. The concept of Value Added no longer categorises employee-related expenses as regular expenses but instead considers them as investments. Capital employed (CE) refers to subtracting the intangible assets from tangible assets of the total assets. On the other hand, human capital (HC) refers to expense's employees incur, such as salaries and related expenses. Lastly, structural capital (SC) is determined by subtracting human capital (HC) from value added (VA).

The Pulic (1998) model was modified to achieve the study objectives. The modified model is stated as follows:

$$ROA_{it} = \alpha + \beta_1 CEE_{it} + \beta_2 HCE_{it} + \beta_3 SCE_{it} + \beta_4 CEE_{it} * HCE_{it} * SCE_{it} + \beta_5 Size_{it} + \beta_6 Age_{it} + \beta_7 INF_t + \mu_{it}$$

Where: α = constant term

ROA= Return on assets

HCE = Human Capital Efficiency

CEE = Capital Employed Efficiency

SCE= Structural Capital Efficiency

CEE*HCE*SCE = Interactive term of capital employed efficiency, human capital efficiency and structural capital efficiency.

Size= Size of the company, Age= Age of the company, INF= the level of inflation in the country

β_0 = Constant term (intercept), β_1 - β_7 = Coefficients of estimated parameters, μ = Error term.

Control variables (size, age, and inflation) have been added because studies (Ayse *et al.*, 2019; Al Momani *et al.*; Vithana *et al.*, 2019) have established that they all significantly affect firm financial performance. The data for the study is secondary data. Data was sourced from the audited financial reports of the listed FBT companies in Nigeria for eleven years (2012-2022). The population for this study consisted of all firms listed on

the Nigeria Exchange Group in the sub-category of Food, Beverage, and Tobacco (FBT). The companies are seven: Cadbury Nigeria Plc, GSK Nigeria Plc, Nestle Nigeria Plc, Guinness Nigeria Plc, Nigeria Breweries Plc, Champion Breweries Plc, and International Breweries Plc.

CHAPTER FOUR

DATA PRESENTATION AND INTERPRETATION

The table shows the results of the descriptive statistics.

Table 4.1 Summary Statistics

Variable	Mean	Standard deviation	Coefficient of Variation
ROA	7.065	9.059	1.282
CCE	0.807	0.354	0.439
HCE	8.373	3.427	0.409
SCE	0.855	0.074	0.087
SIZE	17.950	1.243	0.069
AGE	53.241	10.490	0.197
INF	11.755	3.050	0.260

Source: Author's Computation (2023)

Table 4.1 shows that ROA has a mean of 7.065%, which shows that the sampled FBT companies witnessed relatively good profitability over the period under review. The mean values of CCE, HCE, and SCE are 0.807, 8.373, and 0.855, respectively. This suggests that, on average, CCE and SCE among the sampled Nigerian FBT companies are relatively low, while HCE is relatively high. The mean value of SIZE is 17.950, which suggests that, on average, the sampled Nigerian FBT companies are large. The mean value of AGE is 53.241 years, suggesting that most of the sampled Nigerian FBT

companies have been operating for over fifty years. The INF has a value of 11.755%, suggesting that the country recorded a relatively higher inflationary trend during the review period. The coefficient of variation (CV) determines the extent to which a variable varies across units. ROA has the highest CV value of 1.282, indicating that the Return on assets highly varies across the sampled Nigerian FBT companies. SIZE has the lowest CV value of 0.069, suggesting that the sampled Nigerian FBTs are comparable in size.

Test for Multicollinearity

Evidence of linear relationships among the independent variables is often referred to as multicollinearity. The Variance Inflation Factor (VIF) test is one way to check the multicollinearity level. To confirm that the independent variables are not heavily collinear, the VIF test can be employed. The rule of thumb suggested that the VIF statistic must be less than 10 to confirm that the estimates would not be biased due to multicollinearity. Table 4.2 shows that the level of linearity amongst the variables is within the acceptable standard, as none of the independent variables has a VIF statistic above 10.

Table 4.2: Multicollinearity Test

Variable	VIF statistic
CEE	1.88
HCE	6.60
SCE	7.20
SIZE	4.23
AGE	3.68
INF	1.06

Source: Author's computation (2023)

Table 4.2 shows that the VIF statistic of all the variables is less than ten, indicating that the independent variables are not highly collinear.

Model Selection Test

This study's static panel regression analysis estimates the pooled OLS, fixed-effects, or random-effects model based on some preliminary tests. Table 4.3 presents the model selection tests. The Breusch-Pagan Lagrange Multiplier (BPLM) test for random-effects determines whether pooled OLS is ideal or needs to proceed to estimate either a fixed-effects or random-effects model.

Table 4.3: Model Selection Test

Test	Null Hypothesis	Test statistic	Decision
Breusch-Pagan LM test for random-effects	Variance of random effects is zero	0.00(1.000)	Pooled OLS is appropriate

Source: Author's Computation (2024)

Table 4.3 shows that the BPLM test fails to reject its null hypothesis, thus indicating that pooled OLS is appropriate. Hence, there is no need to proceed to either estimating the fixed-effects or random-effects model.

Model Estimation

Table 4.4 presents the results of the pooled OLS model estimated with the pooled OLS estimator.

Table 4.4: Estimation Results

Variable	Coefficient	P-value
Constant	-78.022	0.000***
CEE	-2.454	0.763
HCE	-3.041	0.009*
SCE	93.921	0.012**
CCE*HCE*SCE	2.638	0.011**
SIZE	2.136	0.101
AGE	-0.383	0.009*
INF	-0.160	0.542
Model Diagnostics		
F-statistic	13.25	0.000***
R ²	0.669	

***, ** and * indicated statistically significant at 1%, 5% and 10% significance level, respectively.

Source: Author's computation (2024).

Table 4.4 shows that the coefficient on CEE is negative but not statistically significant, indicating that CEE is negatively but not significantly related to financial performance

(ROA). This finding suggested that CCE does not impact the financial performance of listed FBT companies in Nigeria. This finding is in line with the findings of Ahangar (2011) and Onyekwelu *et al.* (2016) but does not support Xu and Liu (2020). HCE has a negative and statistically significant coefficient, suggesting that HCE is negatively and significantly associated with financial performance. This finding is somewhat surprising as human efficiency is expected to be a positive driver of firm performance in the listed FBT companies in Nigeria. In other words, the financial performance of listed FBT companies in Nigeria tends to decrease with increased human capital efficiency. This finding contradicts Ngoc and Duc (2020), Kwarbai and Akinpelu (2016) and Ahangar (2011) but supports Xu and Liu (2020) postulations.

The coefficient on SCE is positive and statistically significant, indicating that SCE has a significant positive relationship with financial performance. This finding implies that structural capital efficiency has a beneficial impact on the financial performance of firms. This further implies that improvements in structural capital resulted in improved profitability for the FBT companies. This finding offers support for Chan (2009) and Toorchia *et al.* but contradicts the findings of Onyekwelu *et al.* (2016) and Ahangar (2011). The coefficient on the interactive term of CEE*HCE*SCE is positive and statistically significant, suggesting that the combination of CEE*HCE*SCE has a positive and significant relationship with financial performance. This finding indicated that combining the three components of IC leads to higher financial performance for the listed FBT companies in Nigeria. The finding equally supports the findings of Nikmah

and Aida (2016). For the control variables, only firm age contributed significantly to the financial performance of firms amongst the control variables.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion and Policy Recommendations

Motivated by the ability of IC to improve firms' competitive advantage significantly, this study examined the role of IC on the financial performance of listed FBTs in Nigeria. Based on the findings, this study concluded that HCE, SCE and the interaction of the three components of IC are the major drivers of the firm's prosperity in Nigeria. In addition, the age of a firm also plays a crucial role in determining its financial performance. Consequently, this study recommended that while it is important for firms to improve each of the components of IC, it is more important to look at the interaction of the three components as the interaction of the components can further improve the performance of the listed FBT in Nigeria.

5.2 Summary of Findings

1. This finding suggested that CCE does not impact the financial performance of listed FBT companies in Nigeria.
2. HCE has a negative and statistically significant coefficient, suggesting that HCE is negatively and significantly associated with financial performance.

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