# EFFECT OF INTELLECTUAL CAPITAL ON CORPORATE VALUATION OF QUOTED FIRMS IN NIGERIA

BY

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A DISSERTATION SUBMITTED TO SCHOOL OF POST GRADUATE STUDIES, NNAMDI AZIKIWE UNIVERSITY,AWKA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY(PhD) DEGREE IN ACCOUNTANCY.

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## DECLARATION

I hereby declare that this dissertation has been written by me and it is a report of my research work. It has not been presented in any previous application for the award of a Doctor of Philosophy (PhD) Degree. All quotations are indicated and sources of information specifically acknowledged by means of references.

**ONYEKWELU, UCHE LUCY FIDELIA**

**2006407010P**

# CERTIFICATION

This dissertation entitled "Effect of Intellectual Capital on Corporate Valuation of Quoted Firms in Nigeria" meets the regulations governing the award of Doctor of Philosophy (Ph.D) Degree of the School of Postgraduate Studies of Nnamdi Azikiwe University, Awka, for its contribution to knowledge and literary presentation.


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## DEDICATION

This dissertation is most profoundly dedicated to ALMIGTHY GOD for his Boundless Mercies and Grace.

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**ABSTRACT**

*This study examined the effect of Intellectual Capital(IC) on corporate valuation of quoted firms in Nigeria. This work adopted the Ex post-facto research design using the Panel Data. The study covered a period of ten years (2004-2013). Sample size of Twenty One(21) firms. Purposive Sampling Method select three firms from each of the seven sectors studied. Data were sourced from firms' annual financial statements and Nigerian Stock Exchange using content analysis approach. Six hypotheses guided the study. The independent variable is Intellectual Capital while the dependent variable is corporate valuation. Intellectual Capital was measured using Human Capital Efficiency (HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency (CEE). The proxies for the dependent variable were Price Earnings (P/E)Ratio, Market to Book Value Ratio(M/BV), Earnings per Share(EPS), Net Assets per Share(NAPS), Gross Revenue per Share(GRPS) and Share Price(SP). The study adopted the Value Added Intellectual Coefficient (VAIC) Model as developed by Pulic (1998) to examine the effect of Intellectual Capital and firms' values. E-View Statistical Tool 8.0 was used in data analyses. Analyses were done using Multiple Regression and Correlation Coefficient Analysis. The analyses were done at 5% level of significance. Results revealed that HCE had a positive and significant effect on EPS, NAPS, GRPS and SP but showed it had a negative and insignificant influence on P/E Ratio. HCE had a positive and insignificant effect on M/BV Ratio. SCE had a positive and insignificant effect on P/E Ratio. It also had a negative and insignificant effect on firm's EPS, M/BV and NAPS. SCE had a negative and significant effect on SP. Findings further indicate that CEE had positive and insignificant influence on P/E Ratio, M/BV Ratio, EPS and NAPS respectively. CEE had a negative and insignificant effect on GRPS and SP. The study concludes that Human Capital(HC) and Capital Employed(CE) if properly harnessed can tremendously enhance value creation potentials of firms in Nigeria. The implication of the findings is that investing in HE and CE will lead to growth in corporate values of firms in Nigeria while investing in structural capital can be counter-productive. The study therefore recommends that companies should invest substantial part of their earnings on human capital via co-ordinated knowledge development since it has the highest influence on firms and is also capable of stimulating other value creation potentialities to enhance firms' values. They should also provide the much-needed infrastructure that will support a productive work force but devise strategies that could revamp the nature of their Structural Capital for it to support enhanced growth in corporate values.*

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# LIST OF ABBREVIATIONS

| | ABBREVIATION | MEANING |
|---|---|---|
| 1. | IC | Intellectual Capital |
| 2. | HC | Human Capital |
| 3. | SC | Structural Capital |
| 4. | CE | Capital Employed |
| 5. | ICE | Intellectual Capital Efficiency |
| 6. | VA | Value Added |
| 7. | VAIC | Value Added Intellectual Coefficient |
| 8. | HCE | Human Capital Efficiency |
| 9. | SCE | Structural Capital Efficiency |
| 10. | CEE | Capital Employed Efficiency |
| 11. | P/ER | Price Earnings Ratio |
| 12 | M/BVR | Market to Book Value Ratio |
| 13. | EPS | Earnings per Share |
| 14. | NAPS | Net Assets per Share |
| 15. | GRPS | Gross Revenue per Share |
| 16. | SP | Share Price |
| 17. | IFRS | International Financial Reporting Standards |

| | | |
|---|---|---|
| 18. | IASB | International Accounting Standards Board |
| 19. | IASC | International Accounting Standards Committee |
| 20. | OECD | Organization for Economic Co-operation and Development |
| 21. | CEO | Chief Executive Officer |
| 22. | USA | United States of America |
| 23. | NSE | Nigerian Stock Exchange |
| 24. | R & D | Research and Development |
| 25. | EVAICM | Extended Value Added Intellectual Efficiency Model |
| 26. | LICEG | Lucy's Intellectual Capital Efficiency Guage |
| 27. | O & G | Oil and Gas |
| 28. | P/HC | Personal/Household Consumables |

## CHAPTER ONE

## INTRODUCTION

**1.1     Background of the Study:**

Globalization and the conscientious efforts of  the International Accounting Standards Board (IASB) in recognizing intangible assets as an integral part of corporate assets heralded key debates on defining the place of intellectual assets in corporate valuation and by extension financial reporting. These moves together with global economic down turn heightened firms' quest  for strategies that could ensure an all-encompassing corporate valuation model. In view of the tremendous challenges posed the afore mentioned, corporate managers also sought for ways of harnessing  tangible assets as well as  the intangible assets at firms' disposal by encouraging knowledge development which they hoped could create values(Deep & Narwal, 2014). These circumstances have been argued to have culminated into the knowledge economy that is driven by 'Intellectual Capital'(Triparthy, Sar & Sahoo, 2015).

Stewart(1997) refers to Intellectual Capital(IC) as 'Brain Power'. He described it as  the sum of the knowledge that a company has that gives it a competitive edge in the market place. He recognized IC as being capable of value creation that will increase wealth. Edvinsson(1997) as cited by Milost(2013) postulates that intellectual capital is the derived insights about head value and future capabilities based on Human Capital, Structural Capital and Relational Capital. Banimahd, Mohammadrezeai & Mohammadrezeai(2012) and Sudarsanam, Sorwar & Marr(2003) note that human capital basically contains knowledge provided by employees in the form of competencies, commitment, motivation and loyalty. Accordingly human capital could come from advice or tips with key components as known-how, technical expertise and problem-solving capabilities, education, attitudes and entrepreneurial spirit. Structural capital includes organizational culture, intellectual procedure, processes, philosophy, systems, databases and contracts. Customer capital also referred as relational capital is the ability of a company to protect its relationship with

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customers and other stakeholders. Customer satisfaction, relationship with network of suppliers, repeated business and relationship with strategic partners, financial growth and price sensitivity can all be considered as indicators of customer capital (Banimahd, Mohammadrezaei & Mohammadrezaei, 2012).

The emergence of knowledge and its preference to production economy has also been argued to have ushered in a paradigm shift from a period when firms were exclusively assessed on their physical assets(tangible assets) to an era of an all-encompassing platform that saw firms' worth being an aggregate of both tangible and intangible assets(Maditinos, Chatzoudes, Tsairidis & Theriou(2011). This is because the 'Knowledge Economy' views as important factor 'Intellectual Capital' of firms as it distinguishes a firm's capabilities in creating a sustainable competitive advantage in the market (Djhamil, Razafindrambinina & Tandeans, 2013). Further to this, traditional financial reporting that only coveres the value of tangible assets while ignoring intangible assets has been argued to underestimate the true value of firms (Tripathy,et al., 2015; Anuonye, 2015, Berzkalne & Zelgalve, 2014; Henry, 2013 ).

According to Mehralian, Rasekh, Akhavan & Sadeh(2012), in the current century, the industrial development model must elaborately accommodate knowledge-based and innovation intensive companies by providing valuations models which is not achievable by the traditional techniques. They argued that intangible assets of knowledge and intellectual capital are exceedingly overwhelming conventional valuating means such as land, property and capital assets and intellectual assets is turning into the determinants and credible sources of companys' success. The pharmaceutical, telecom firms among others are involved in high capital intensive knowledge development through Research and Development(R&D) and this is likely to have a large impact on their economic success(Mehralian,et al,2012). They argued that investors are likely to seek for indicators of 'good- knowledge-handling' in order to assess whether their investment will be an appropriate decision.

Previous studies have also attributed the rate of growth in the value of stock of high-brid telecom industries and other knowledge-based firms to the impact of their huge investments in intellectual capital (Stewart, 1997; Banimahd, et al. 2012; Surdarsanam, Sowar & Marr,2003; Berzkalne & Zelgalve, 2014). The market estimates the value of companies with intangible assets to be significantly higher than the calculated book value (Chen, Chen & Yuchang, 2005; Raihi-Belkaoui, 2003). Frykman & Tolleryd(2010) note that the absence of Intellectual Capital in conventional accounting means that the non-financial assets of a company are not reflected in the balance sheet.

Intellectual Capital is also argued to have the capacity of filling the difference between market value and book value of firms (Ahangar, 2011 and Rahman, 2012). Intellectual capital if well harnessed and properly managed could enhance firms' competitive advantage through enhancing value creation efficiency from human creativity, the firms' operational structure and customer–supplier relationship (Malik, Aslam & Latiff, 2012). Epetimehin & Ekundayo(2011) note that intellectual capital is a vital corporate asset and will melt away, unless company do something to stop the brain-drain and retain critical knowledge. Anuonye(2015) argues that financial performance in relation to Intellectual Capital connotes notable actions or achievements which accrue to an enterprise as a result of IC measurement and application including its effect on Earnings per Share(EPS).

The International Accounting Standards Board(IASB) as earlier highlighted through International Accounting Standard(IAS)38 on Intangible Assets and the subsequent International Financial Reporting Standards 3 on Business combinations further attest to the need for integration of Intellectual capital in asset value of firms. IAS 36 on Impairment of Assets applied by IFRS adopting countries and the treatment of Goodwill, Research and Development and other identifiable intangible assets all give credence to the need for incorporating Intellectual Capital in financial reporting(Vafei, Taylor & Ahmed, 2011). To further buttress this point, Berzkalne & Zelgalve(2014) argue that though intellectual capital and knowledge assets are difficult to discern

and quantify, their results will none the less be reflected in the company's greater productivity, efficiency and overall profitability. Further to the above submissions,Chen, Chen & Yuchang(2005) opine that the limitations of financial statements in explaining company value underline the fact that the source of economic value is not only in production of material goods but also in the creation of intellectual capital.  IC's ability to enhace value creation is further argued to be  evident in blue chip companies with high share prices  that are known to have relatively less investments in tangibles when compared to their intellectual investments(Ngari, Gichira, Aduda & Waititu, 2013).

Again the concept of hidden value as propounded by Roos & Ross(1998) concerning valuation of companies is evident and  symbolized by Microsoft and Intel Corporations where intangible assets constituted 94% and 85% respectively of their market value. IC is also evident in the outcome of a cross-sectional study of pharmaceutical companies which indicate that the difference between market value and book value is 30-fold in which intellectual capital has a significant role in company valuation(Brookings,1996).

Some studies have also argued that the maximization of firms' value is often attributable to firms' ability to manage its key resources namely: people, material and process which are denoted in 'Intellectual capital' (Sofian, Rasid & Mehri, 2011; Mojtahedi, 2013; Vafei, Taylor & Ahmed, 2011; Banimahd, et al., 2012; Berzkalne & Zelgalve, 2014; Saeed, Farahmand & Khorasani, 2013). Intellectual Capital has been identified as key to the growth of firms as it is an asset of the company and any increase in intellectual capital may enhance the value of company as well (Henry, 2013; Ahangar,2011; Pulic, 1998; Maditinos, Chatzoudes, Tsairidis & Theriou, 2011).

Extant literature on Intellectual capital and its value creation capacities has led to the development of  methods for  its measurement, since traditional financial tools are not able to capture all of its aspects (Campsi  & Costa, 2008; Nazari and Herremans, 2007).  Pulic(1998) developed a model considered very popular among scholars  for the measurement  of value added of intellectual assets known as Value Added Intellectual Coefficient(VAIC). The model uses value added as a symptom

of value creation through its components (Human Capital, Structural Capital and Relational Capital (Anuonye, 2015; Berzkalne & Zelgalve, 2014; Pouraghajan, Ramezani & Mohammadzadeh, 2013; Salman, Mansor, Babatunde & Tayib,2012; Asadi,2012;). VAIC measures how much new value has been created per invested monetary unit of resources. The VAIC model monitors and measures the extent to which a company produces added values based on intellectual capital efficiency or intellectual resources (Chiucchi, 2013; Chang, 2013; Epetimehin & Ekundayo, 2011; Ekwe, 2012; Ahangar, 2011). This model is also adopted in this study.

The rest of this study will empirically examine the extent to which intellectual capital affects the corporate valuation of quoted firms in Nigeria.

## 1.2    Statement of Problem

The justification or otherwise for the place of intellectual capital often refered to knowledge assets in driving the earnings and indeed the other corporate valuation indices of firms has constituted a challenging academic puzzle in the past few decades. Some scholars have identified intellectual capital as being a key driver of corporate value enhancement (Henry, 2013; Vafei, et al., 2011; Banimahd, et al., 2012; Berzkalne & Zelgalve, 2014 ). Others further submit that intellectual capital provides a platform through which firms enjoy competitive advantage, well and above their contemporaries (Sofian, Rasid & Mehri, 2011; Mojtahedi, 2013; Boda & Szlavik, 2012; Saeed, et al. 2013).

According to Naidenova & Oskolkova(2013), intellectual capital plays an important role in several business sectors which rely heavily on research and development or human capital for their survival(Onafalujo, Eke & Akinlabi, 2011; Asadi, 2012;Berzkalne,2013). Okpala & Odogwu(2010) submit that Human Capital Efficiency is significantly correlated with stock prices. Samilogu(2006) and Tan, Plowman, & Hancock(2007) submit that an increase in intellectual capital will increase the value of firms and financial performance. Berzklane & Zelgalve(2014) indicate a statistically significant and positive relationship between IC and company value. Banihahd, et al.(2012) argue

that IC has a positive relationship with firm's size but that there is no relationship between market valuation and intellectual capital. Ekwe(2012) found out a statistically strong relationship between the components of intellectual capital and Market to Book Value (M/BV) Ratio.

In contrast to the above submissions, some empirical studies could not establish any statistical relationship between intellectual capital and firms' values while others show an inverse relationship. Jensen(1998) found no statistical significant relationship between Intellectual Capital and organizational market values. Puntilo (2009) indicate an inverse relationship between intellectual capital as defined by structural capital and M/BV ratio. Besharati, Mazhari & Mahdavi (2012) found no relationship between IC and innovative capital with financial performance and values of firms in Tehran Stock Exchange. Firer & Stainbank (2003) used the Value Added Intellectual Coefficient (VAIC) in South Africa and submit that there is no significant relationship between IC and profitability, productivity and market value. Zou & Huan(2011) opine that Capital Employed Efficiency and Structural Capital Efficiency(SCE) have a negative correlation with Technical Efficiency while Human Capital Efficiency(HCE) has a positive correlation with Technical Efficiency.

Anuonye (2015) argues that IC components are positively but insignificantly related with Earnings per Share (EPS) in Nigeria. Kamath(2008) avers that IC has positive influence on profitability and productivity but not with market values. Maditinos, et al.(2011) argue that IC is negatively and significantly related with Market to Book Value(M/BV). Saeed, et al. (2013) submit that only IC (Human Capital and Capital Employed) is positively and significantly related with Growth in Revenue. Banimahd, et al.(2012) argue that IC is positively and significantly related with profitability and productivity but not market valuation measured by firms' M/BV Ratio. Pouraghajan, Ramezani & Mohammadzadeh (2013) argue that there is no significant relationship between Value Added of Human Capital and M/BV ratio but is positively and significantly related

to revenue growth. Tanideh(2013) found out that there is no relationship between Intellectual Capital and firms' value.

The above submissions clearly indicate that the task of reaching a consensus on the effect of Intellectual Capital and corporate valuation is yet to be rested. This study becomes very imperative, as there also exists the obvious gap created dearth of locally groomed study that could serve the peculiar needs of our socio-economic environment. Further to this, the few local studies reviewed, were skewed towards the financial sector(banks and insurance). However, the peculiar nature of the firms in the financial sector may limit the applicability of findings from such studies. Again, most of the past studies reviewed were mono-sector based; our multi/cross-sectoral approach further creates a platform for a more encompassing study that could serve specific and yet diverse interest groups including industry players, valuation experts, the academia and a host of others of various sectors in the economy.

The few previous reports also had very few dependent variables. This study adopted a multi-facet approach by studying one main independent and six dependent variables across seven economic sectors in Nigeria, thereby, enhancing the value creation potentials of the report. A study of this nature becomes expedient also in the face of prevailing economic downturn faced by firms and as the accounting profession through the IFRS standards seeks to properly integrate the intangible assets in financial reporting  and hence the justification for this study.

## 1.3     Objectives of the Study:

The broad objective of this study is to evaluate the effect of  intellectual capital  on corporate valuation of quoted firms  in  Nigeria.  The specific objectives of the study are:

 (1)     To determine the effect of Intellectual Capital on Price Earnings (P/E) Ratio of firms in Nigeria.

(2)     To ascertain the effect of Intellectual Capital on the Market to Book Value (M/BV) Ratio of firms in Nigeria.

(3)     To evaluate the effect of Intellectual Capital on Earnings per Share (EPS) of firms in Nigeria.

(4)     To appraise the effect of Intellectual Capital on the Net Asset per Share (NAPS) Value of firms in Nigeria.

(5)     To ascertain the effect of Intellectual Capital on the Gross Revenue per Share(GRPS) of firms in Nigeria.

(6)     To examine the effect of Intellectual Capital on the Share Prices (SP) of firms in Nigeria.

**1.4     Research Questions:**

In order to achieve the afore-stated objectives, the following research questions will be addressed in this study:

(1)     To what extent does Intellectual Capital affect Price Earnings (P/E) Ratio of firms in Nigeria?

(2)     How does Intellectual Capital affect the Market/Book Value (M/BV) Ratio of firms in Nigeria?

(3)     To what extent does Intellectual Capital affect the Earnings per Share(EPS) of firms in Nigeria?

(4)     To what extent does Intellectual Capital affect the Net Asset per Share (NAPS) of firms in Nigeria?

(5)     How does Intellectual Capital affect the Gross Revenue per Share (GRPS) of firms in Nigeria?

(6)     To what extent can Intellectual Capital affect the Share Price (SP) of firms in Nigeria?

**1.5     Research Hypotheses:**

In view of the research questions, the following null hypotheses are formulated to guide this study:

1.    Intellectual Capital has no significant effect on Price/Earnings(P/E)Ratio of firms in Nigeria.

2.    Intellectual Capital does not significantly affect Market to Book Value Ratio (M/BV) of firms in Nigeria.

3.    Intellectual Capital does not significantly affect Earnings per Share (EPS) of firms in Nigeria.

4.    Intellectual Capital has no significant effect on Net Asset Value (NAPS)  of firms in Nigeria.

5.    Intellectual Capital has no significant effect on  Gross Revenue per Share (GRPS) of firms in Nigeria.

6.    Intellectual Capital does not significantly affect Share Price (SP) of firms in Nigeria.

**1.6    Significance of the Study**:

This study will be of immense benefits to diverse interest groups namely: Human Resources Managers, Employees of Corporate Organisations, Trade/Labour Unions, Accounting Regulating Bodies such as Financial Reporting Council of Nigeria. It will also be  apt to Professional Accounting Bodies such as the Institute of Charetered Accountants of Nigeria and Association of National Accountants of Nigeria, Reseachers and the Academia amidst other accounting associations in Nigeria.

Specifically, the Human Resource Managers will find this report apt as it will deepen their knowledge and understanding on the bottom line effect and implications of their decision concerning hiring, training and even motivating staff. The report provides a better platform for appraising human capital assets and other components of intellectual capital available to the firms. This knowledge will in turn help them device better strategies on how to encourage staff through enhanced welfare packages. They will through the report also appreciate better the need for training of staff which will enhance better corporate performance and firms' valuation.

Financial Analysts will benefit from this report as they will appreciate the indices that enhance better corporate valuation across the firms in Nigeria and therefore be in a better position to advice their clients. Other groups that will benefit from the study are scholars of accounting especially those carrying out research in related topics. This is because this study has further enriched the literature that is available for such studies in the developing countries and Nigeria in particular.

The Trade/Labour Unions will find this study very useful tool as it will provide them with an informed basis for pressing further on the welfare of their members as they appreciate the enormous contributions of their members who have constituted the human assets and drivers of the other arms of intellectual capital. Employers of Labour will also come to terms, treat issues concerning the intellectual assets of the firms with caution, and try to place a premium on them before they permanently loose them and all the attendant values attached. The various strata of government especially the directors of personnel and establishments in the various government agencies will employ this report as reference material to better appreciate the unique place and endowments of their employees and deploy this report in planning, directing, controlling and harnessing available IC for enhancing their performance.

Research and Academia will find this study very apt. Scholars will find this report rewarding and relevant as it has provided a platform for further debate in Intellectual Capital. The academia led by the university system and relevant accounting bodies will find this study relevant, as the recommendation could guide policies and curriculum/standards for the integration of the study of intellectual capital related courses into their system. This study will also help aid financial/corporate reporting in Nigeria and other developing countries.

**1.7 Scope of the Study**

This study assesses the effects of Intellectual Capital(IC) on Corporate Valuation of quoted companies in Nigeria. The study is carried out in Nigeria and was based on Twenty-One companies selected from seven sectors of the economy. The sectors studied are: Healthcare, Information and Communications Technology (ICT), Oil and Gas, Food & Beverages, Personal/Household

Consumables, Breweries and Conglomerates. The study is in line with classification of industries by how technologically and knowledge-based they are as noted by previous studies (Francis & Schipper, 1999; Vafei, Taylor & Ahmed, 2011; Banimahd, et al. 2012; Sofian, et al, 2011; Boujelbene & Affes, 2013).

This study covered a ten-year period(2004 to 2013). The choice of 2004 as base year is that it marked a period that heralded the information/knowledge revolution era through Information and Communication Technology(ICT) in Nigeria. Nigerian having liberalized its communication industry by registering other carriers apart from NITEL such as MTN, ECONET now Airtel and even Glo among others under the government of Gen. Obasanjo. Again, the period marked the pre and post global financial meltdown era and globalization. This was a period when many firms had a conscious rethink on how to ensure corporate survival, a move that saw many firms making very bold and deliberate investments on Intellectual capital by encouraging knowledge development as a way of ensuring competitive advantage and enhanced value creation in the face of fierce competition and recession.

The study also covered a period when information and communication technology virtually took over and moderated how business are run through ICT which is evident in a knowledge economy.

The study covered only firms listed on the Nigerian Stock Exchange (NSE) and did not consider companies from other countries.

**1.8 Limitations of the Study:** Some of the key limitations of this study are:

**Dearth of Dedicated Research Databases:** In the course of this work, the researcher observed that there was the absence of dedicated databases, which could serve as a one-stop shop for data needed for this study. Study revealed that neither the Nigeria Stock Exchange nor the firms or any other organization maintained such platforms. The researcher however sought out the needed data from the individual firms' annual reports and accounts and the Nigerian Stock Exchange Fact Book.

**Volume of Unquoted Firms in Nigerian Stock Exchange:** Since Intellectual Capital is all about knowledge and many of the high-knowledge based organisations who operate in Nigeria were found not to publicly quoted. They were therefore excluded from the study as the researcher could not assess the needed data. Firms in the Information and Communication industry such as MTN Nigeria, GLO Nig., Airtel Nig Ltd., DSTV, Multi Choice Nigeria were not listed. Firms in the healthcare industry such as Emzor Nig. Ltd, Swipha Nig., and JUHEL Nig Ltd among others were not studied in view of this constraint. The researcher however resorted to studying only those companies that were publicly quoted since assessing the other companies' records may be impossible.

**Issue of the Emerging Nature of the Research Topic:** There was clear case of dearth of relevant materials in the form of textbooks in Nigeria because of the emerging nature of the topic. As such, this work was substantially done using scholarly journal articles. Though many of the sudies were conducted outside the shores of this country, a good number of articles and home grown thesis on related topics were reviewed in the course of the work. The combination of these materials provided the study a robust basis to appreciate the topic better.

**Limitations as per the Number of Years some firms have been Listed in the Stock Exchange:** It was also discovered that many of the firms who currently operate at the exchange were listed after 2004 and could therefore not have enough data which could serve the purpose of the study. These companies were eliminated from the number of firms that qualified for this study while those that had enough data were studied.

Though the afore-mentioned challenges existed , the researcher had devised adequate strategies to as stated above which had ameliorated the effects they would have had and therefore not reasonable enough to undermine the results of the study.

**1.9    Operational Definition of Terms:**

**(a)    Intellectual Capital:** Intellectual Capital(IC) also known as Intellectual Assets is defined as the knowledge that transforms raw materials and makes them more valuable (Stewart,1997).

It includes the talent of staff, the value of proprietary knowledge, processes and the value of relationships with customers and suppliers. Intellectual Capital comprises of the Human Capital, Structural Capital and Relational Capital.

**(b)** **Human Capital:** This consists of the knowledge, skills, experiences, abilities of individuals and talents of firm's employees and managers. It ranges from specific technicalities to softer skills like salesmanship. This important element contributes to firm value creation and financial growth. Human Capital (HC) is valued and interpreted as employee expenses.

**(c)** **Structural Capital:** This is described as organisational culture, intellectual procedure, process, philosophy, systems, databases and contracts. It comprises knowledge assets that are indeed company property. Structural capital consists of intellectual property such as patents, copyrights and trademarks. Structural capital is difference between produced benefit (VA) and human capital.

**(d)** **Relational Capital:** This is the ability of a company to protect its relationship with customers and other stakeholders. It includes the customer satisfaction, relationship with network of suppliers, repeat business, and relationship with strategic partners, financial growth and price sensitivity.

**(e)** **Intellectual Property:** It is an intangible assets, which can be bought, sold, licensed, exchanged or gratuitously given away like any other property. An asset is something that transforms raw material into something more valuable. It is a subset of Intellectual capital comprising of such assets as patents, copyright and ownership of intellectual property may be transferred.

**(f)** **Knowledge Asset:** This concept defines as resources that underpin capabilities, which in turn can be transformed into core competencies that allow organisations to execute their strategy in order to achieve better business performance.

**(g)** **Corporate Valuation:** Corporate valuation defines the processes/basis of determining the actual worth of a firm or an organization.

**CHAPTER TWO**

**REVIEW OF RELATED LITERATURE**

**2.0 Introduction:** This chapter articulates and presents the views of of extant literatures and studies on the effect of intellectual capital on corporate valuation. The submissions are compartmentalized into the Conceptual Framework, Theoretical Framework and Empirical Literature. Other sub-headings in this chapter are Summary of Literature and Gap in Literature.

**2.2 Conceptual Framework**

2.1.1 Defining Intellectual Capital: Intellectual Capital(IC) has been widely acknowledged as that innate attribute usually acquired by a firm, which drives it on the wheel of value creation, value addition and value sustainability. To this end, different scholars and researchers have postulated many definitions.

The concept of Intellectual Capital generally can be said to have emanated from description of the dynamic effect of individuals: the 'Intellect' (Sveiby, 2000). The very first of such definitions is the one credited to Thomas Stewart, a pioneer of the concept, who in 1997 in an article captioned 'Brain Power: How Intellectual Capital is Becoming America's Most Valuable Asset' defined Intellectual Capital(IC) as the sum of everything everybody in a company know that gives that company competitive edge in the market place'. He further described IC as that knowledge that transforms raw materials and makes them more valuable noting that for any knowledge to be tagged 'IC', the knowledge must be capable of being used to create wealth.

This definition is closely followed by the one propounded by Edvinsson & Sullivan (1996). They defined Intellectual Capital as 'Knowledge that can be converted into value'. Laurence Prusak of Ernst and Young (later, IBM Consulting packaged and sought to characterize IC as Intellectual material that has been formalised, captured and leveraged to produce a higher-valued asset. Gabraith(1996) in Salman, et al.(2012) define Intellectual Capital as a form of knowledge, intellect, brain activity which uses knowledge a source of value creation. Shaikh (2004) submit that IC is the aggregate of the employee's knowledge capabilities, creativity and innovation, organizational

structure or relational issues could be recognized as IC due to its conversion of employee implicit knowledge into explicit knowledge of the organization.

Roos, Ross, Edvinson & Dragonetti (1997) and Bontis, Keow & Richardson (2000) submit that IC is recognized as a set of intangible assets such as resources, competences and capabilities which increase not only firms' performance but also lead to organizational value creation. Tawyn & Tollington (2012) observe that there is no universal definition for intellectual capital but the cause and effect relationship between IC and value creation is at best, indirect.

Edvinsson(1997) in Milost (2013) postulates that Intellectual Capital (IC) is derived insights about head value, future-earning capabilities based on Human Capital, Structural and Relational Capital. Stewart(1997) gave a most comprehensive definition of Intellectual Capital when he defined it as "a set of knowledge, information, intellectual property and expertise which can be used for the purpose of creating wealth". Roos, et al. (1998) defined IC as the sum of company's members' knowledge and practical translations of this knowledge.

Milost(2013)submits that different authors has identified "Intellectual Capital" with diverse nomenclature such as "Invisible Assets" (Itami, 1987) as cited by Ekwe(2012); "Core Competence"(Hamel & Prahalad, 1990) in Anuonye (2015); "Knowledge Assets" Stewart(1997) "Intangible Resources"(Haanes & Lowendahl,1997) as cited by Banimahd (2012) "Intangible Assets"(Sveiby, 1997). However, the term 'intangible assets' seems to be more popular and acceptable for obvious reasons especially with its adoption by the International Accounting Standard Committee through the pronouncement of IAS 38 and other related standards.

Edvinsson & Malone (1997) defined Intellectual Capital IC as possession of knowledge, applied experience, information technology, customer relationships and professional skills that provide a company with a competitive edge in the market. In the words of Brookings(1996), the word Intellectual Capital is defined as combined intangible assets that enable a company to function.

Ross, Edvinsson & Dragonetti (2000) define Intellectual Capital as 'the sum of company members' knowledge and practical translations of this knowledge(such as trademarks, patents and brands,customer relationship and processes). This definition is closely followed by the definition postulated by Bezklane, et al.(2014) which states that IC is a knowledge that can be converted into profit. Lev (2001) defines it as a non-physical and non-financial claim to future benefits, while Rastogi (2003) described IC as the holistic capability of an enterprise to create value through its knowledge resources and similar.

It can therefore be inferred from the above submissions, that Intellectual Capital remains the knowledge embodiment of an organisation, which enables it to produce, consolidate and even advance on its value creation abilities in its quest for the sustained corporate survival of the business.

Intellectual Capital as defined by Marr, Shiuma & Nelly(2004) is a group of knowledge assets that are attributed to an organisation and most significantly contribute to an improved competitive position of the organisation by adding value to defined stakeholders. Tawyn & Tollington (2012) observed that there is no universal definition for intellectual capital but that the cause and effect relationship between it and value creation is, at best, indirect. According to Frykman & Tolleryd(2010), intellectual capital is all non-financial assets of a company that are not reflected in the balance sheets. Brown, Osborn, Chan & Jaganathan (2005) submit that intellectual capital has ascertainable monetary value, provides a company with a competitive edge and enables it to differentiate itself from competitors.

### 2.1.2  Intellectual Capital: Historical Perspective

Intellectual Capital(IC) is knowledge that transforms raw materials and makes them more valuable while IC is capital asset consisting of intellectual materials(Stewart, 1997). Issues concerning Intellectual Capital could be said to be as old as knowledge itself as the two are being used inter-changeably. The economist John Kenneth Galbraith in 1969 as cited by Banimahd,et al. (2012), first discussed intellectual capital.

Tom Stewart Fortune tracked the first use of the term 'Intellectual Capital' to GR Feiwel in The Intellectual Capital of Micheal Kalecki(1975) and attributed it to John Kenneth Galbraith who in a letter to the economist submits that he wondered wether they realized how much those of them in the world around have owed to the intellectual capital they have provided over the past decades.

Various theories and researchers have attempted to present a general classification of IC components (Luthy, 1998 in Saeed, 2013). Stewart (1997) avers that it was the unusual behaviours of equities of knowledge companies that first drew the attention of the analysts to 'Intellectual Capital'. The term seems to have been employed in 1958, when two financial analysts, describing the stock market valuation of several small, science-based companies, concluded that "The Intellectual Capital of such companies is perhaps their single most important element" and note that their high stock valuations might be termed an intellectual premium(Stewart, 1997). Morris Kronfeld & Rock(1958) as cited by Stewart(1997) in an article titled "Some Considerations of the Infinite'', note that the idea lay dormant for a quarter of a century but in 1980's, Walter Wriston the former chairman of Citicorp note that his bank and other corporations possess valuable Intellectual Capital which accountants and bank regulators did not measure.

Stewart (1997) notes that Karl-Erik Sveiby, a Swiss, intrigued by the anomalous stock market behaviour of knowledge-intensive companies, began an investigation that produced the first analysis of the nature of Intellectual Capital. Sveiby, his colleagues and 'Affarsvarlden', Sweden oldest business magazine, noticed that the magazines proprietary model for valuing initial public offerings broke down for high-tech companies. Sveiby(2000) concludes that these companies possessed assets not described in financial documents or included in the magazine's model. According to Osyngliga (1989) in Stewart (1997), the foundation stone for much, of what evolved to the taxonomy for 'Intellectual Capital'.

They therefore postulate that knowledge assets could be found in three places namely: the competencies of a company's people, its internal structure (patents, models, computer and administrative systems) and its external structure (brands, reputation, relationships with customers and suppliers). After some brainstorming, the concept evolved into human capital, structural (or organisational) capital, and customer (or relationship) capital. Shortly though, Edvinsson(1997), an executive at the Swedish financial service company, persuaded his management to appoint him "Director, IC"; thus Skandia became the business world's most conspicuous laboratory for intellectual capital studies.

Nonaka & Takeuchi(1995) in Japan subsequently carried out investigations of how knowledge is produced and that resulted in "The Knowledge-Creating Company". Thomas A. Stewart who synthesized U.S research in IC in Brainpower followed this: "How IC is Becoming America's Most Important Asset". The research suggests that every company or organisation possesses all three forms of IC namely Human, Structural and Relational capital. It also identified that the challenges faced by executives is how to manage the talent of truly outstanding members of their staff; how to harness the talents of these staff without becoming over dependent on a few star performers or basis to encourage stars to share their skills with others.

As earlier stated, Thomas Stewart in 1997 pioneered a study under IC " Intellectual Capital: The New Wealth of Organisation'' while Skandia, a Swedish financial services company, is considered to be the first large company that started modelling and measuring its knowledge assets. Leif Edvinsson and Pat Sullivan pioneered this study based on the Sveiby's work with Kaplan and Norton's Balanced Score Card leading to the development of first' Skandia Supplement on IC in 1994. Edvinsson & Sullivan(2000) proposed the three components of IC as namely human, structural and relational capital. This nomenclature has been well acclaimed and adopted by authors like (Banimahd, et al., 2012; Berzkalne & Zelgave, 2014; Oba, Ibikunle & Damagun, 2013; Chen, et.al. 2005; Henry, 2013; Puntilo, 2009; Kamath, 2007; Ahangar, 2011).

**2.1.3 Components of Intellectual Capital:**

**Fig.2.1:** Intellectual Capital

Human Capital (Skills, Behaviour, Knowledge)

Structural Capital

Customer/Relational Capital

(Structures, Processes & Culture)

(Valuable relationships and networks)
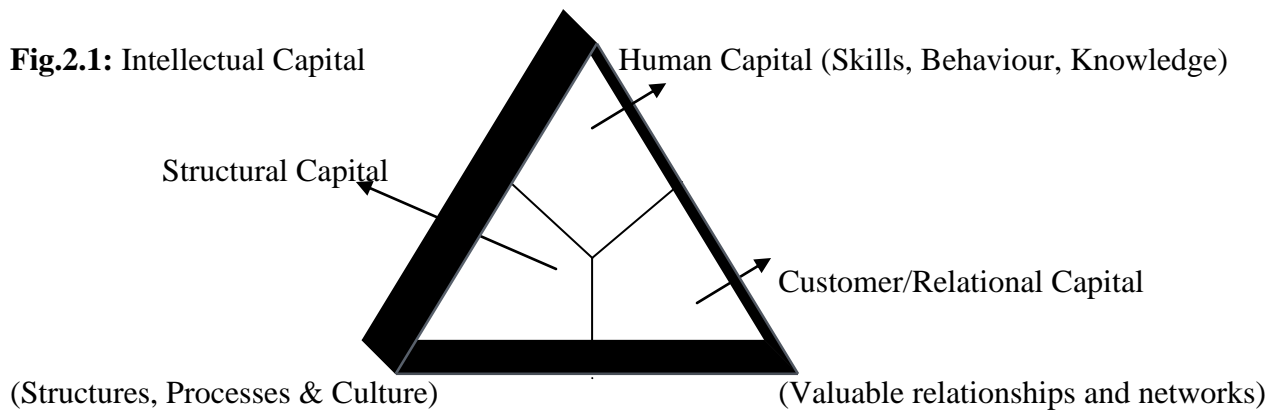
**Source:** Adapted from Stiles and Kulvisaechana(2008)

**2.1.3.1 Human Capital (HC):** Human Capital consists of the skills, competencies and abilities of individuals and groups in a given organization(Stewart, 1997;Firer & Stainbank, 2003; Rahman, 2012; Henry, 2013; Deep & Narwal,2014; Ekundayo, Agbo, & Ozele, 2015; Anuonye, 2015). Human Capital is interpreted as employee value-creating potentials depicted in the knowledge, competencies, skills, experiences, abilities, talents and innovativeness of firm's employees and managers(Boujelbene & Affes, 2013; Banimahd, et. al. 2012; Uadiale & Uwuigbe, 2011; Okpala & Odogwu, 2010). Human Capital is developed through training and education(Edvinsson & Sullivan, 1999).

According to Rastogi(2000) as cited by Stiles & Kulvisaechana(2008), the concept and perspective of human capital stems from the fact that there is no substitute for knowledge and learning, creativity and innovation, competencies and capabilities and that they need to be relentlessly pursued and focused on the firm's environmental context and competitive logic. Nielson, Bukh, Mouritsen,Johansen & Gormsen(2006) submit that human resources capital is the core of IC components and they include skilled staff, knowledge and management philosophy the company's performance has been affected. Human Capital refers to a firm's human resources that possess tacit

knowledge that is capable of yielding value that is capable of positively affecting the market value. In this study, human capital is measured by the employee's expenses as is depicted in the annual reports and accounts of firms studied.

Human Capital for the purposes of this study is defined and measured by the expenditure on Human Resources by way of salaries, wages, training and other related benefits.

**2.1.3.2 Structural Capital**: Structural capital is defined as knowledge assets that are indeed companys' property and includes intellectual property such as patents, copyright and trademarks; processes, methodologies,models; documents and other knowledge artifacts, computer networks and software; administrative systems among others(Stewart, 1997). It comprises of the knowledge, organizational culture, intellectual procedure, process, philosophy, systems, databases and contracts and explains the structures and processes employees develop and deploy in order to be productive, effective and innovative(Boujelbene & Affes, 2013).

Swartz, Swartz & Firer(2006) describes structural capital as the backbone of an organisation. Structural Capital may be divided into two categories namely infrastructure of an organisation (strategies, processes and policies) and the intellectual property of an organisation which consist of copyright, patents and legal rights. An effective interaction between human capital and structural capital leads a firm to enjoy positive relational capital between a firm and its stakeholders (Deep & Narwal, 2014).

Structural capital is the supportive infrastructure, processes and databases of the organization that enable human capital to function(Dumay,2013; Maditionis, et.al. 2011). Structural capital is owned by an organization and remains with it even when the people have left. The structural capital of a firm includes processes, patents and trademarks as well as the organization's image, information system, software and databases(Edvinsson & Sullivan, 2000). Structural Capital is the firm's infrastructure that support the value creation potentials(employees' ideas, innovations and creations) into valuable monetary form (Djamil, Razafindranbina & Tandeans(2013). Structural

capital comprises of firm's information systems, organisational structure and policies, strategies and databases.

Mondal & Ghosh (2012) note that structural capital when properly harnessed could reduce cost and enhance value creation. Structural capital supports employees in their effort to achieve maximum intellectual performance as it includes all assets and values that would remain in the firm even when the employees have left and therefore represents the only assets that are truly owned by the firm(Bontis, 2000).

Edvinsson & Malone(1997) as cited in Uadiale & Uwuigbe(2011) further classified structural capital into organization, process and innovation capital. According to them, organizational capital includes the organization philosophy and systems for leveraging the organization's capability.

According to the VAIC model adopted by this study, Structural Capital is equal to the difference between the firm's previously calculated value added and its human capital.

Thus: SC= VA-HC

**2.1.3.3 Relational Capital:** Relational Capital indicates the potentials an organization has due to ex-firm intangibles. It the value of relationships with suppliers, allies and customers are classified into the forms of brand equity and customer loyalty (Deep & Narwal, 2014; Stewart, 1997). They submit that brand equity defines a promise of quality for which a customer agrees to pay a premium price and the value of brands is measurable in financial terms while the customer loyalty accounts for a base of customers that is measurable and depicted in a premium price. It is the knowledge embedded in relationships with customers, suppliers, industry associations or any other stakeholder that influence the organization's life, (Oba, et.al. 2013; Banimahd, et. al, 2012; Salman,et al. 2012).

Relational capital encompasses the external intangible assets of an organization because external forces play a part in determining the market position and strength of an organization which customers are the principal determinants of this position ( Anuonye, 2015).

It is the ability of a company to protect its relationship with customers and other stakeholders and advantage on it to create value for the firm and maintain competitive advantage. Relational capital, consisting of potentials such as customer relationships, supplier relationships, trademarks and trade names (which have value only by virtue of customer relationships) licenses, and franchises. The notion that customer capital is separate from human and structural capital indicates its central importance to an organization's worth (Dumay, 2012). Relational capital is the knowledge embedded in the relationship between an organization and its customers, stakeholders and strategic alliance partners(Anuonye, 2015; Aroh, 2014). The exchanges across these groups are strategic and are developed with a view to strenghtening the competitive advantage of the role players, Moolman (2011) in Maditionis, et al.(2011)

**2.1.4 Intellectual Capital and Value Creation: The Place of Knowledge Assets**

The advent of knowledge economy has given rise to a new type of business competition: one in which Intellectual Property (IP) also known as knowledge assets and not fixed assets have become the principal source of shareholders' wealth and competitive advantage (Chaplinsky & Payner (2002). Asadi(2012) study using firms in Tehran Stock Exchange in Iran submits that there is significant relationship between  IC and economic value added, cash value added, market value added and refined economic value added. Bezklane & Zelgalve(2014) and Henry(2013) also submit that increased investments in knowledge has led firms to enhance their market share which is achieved via the competitive advantage which they have enjoyed over their rivalry.

Knowledge asset by Surdarsanam, et al. (2003) is the resource that underpins capabilities, which in turn can be transformed into core competencies positing that these core competencies which are embedded in Intellectual capital allow organisations to execute and identify their strategies in order to achieve better business performance which will transcend financial performance but robs off on the corporate values reported.  In their  effort at defining the knowledge assets, (Marr & Schiuma, 2003 in Marr, Schiuma & Nelly, 2004)   in line with the classifications provided by

scholars(Stewart, 1997; Lev,2001; Sveiby, 1997; Brookings,1996) and highlighting a knowledge-based view of the firms developed a framework known as 'The Knowledge Asset Map'.

**Fig.2.2**                              **Knowledge Asset Map**
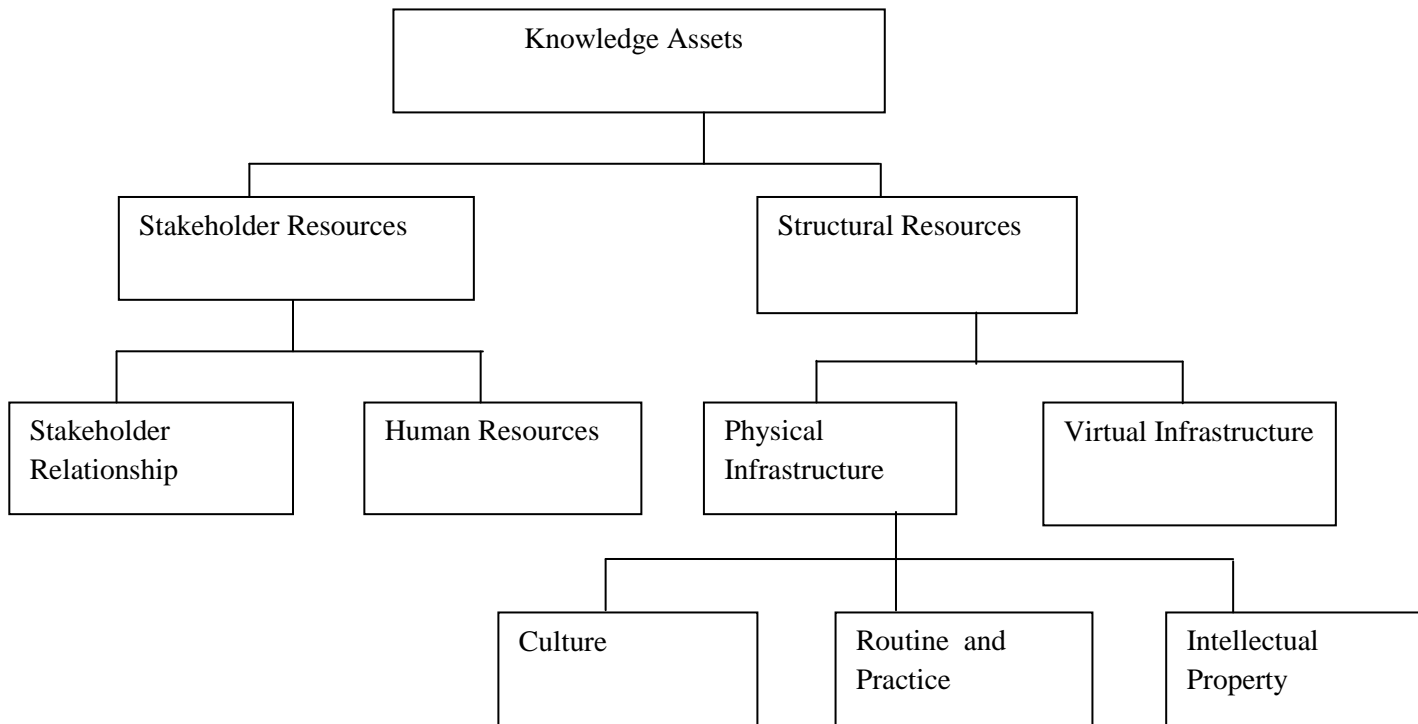


**Source:** Marr and Schiuma(2003)

Marr & Schiuma(2003) as cited in Marr, Schiuma & Nelly(2004), propounded the Knowledge Assets Map as stated earlier. The Knowledge Assets Map shows that a company's knowledge assets and facilitates the identification and definition of critical knowledge areas of a company. The map shows that a company's knowledge assets are categorized into structural and stakeholder's resources. The structural resources constitute of the elements of the basis at the organisational processes. On the other hand, the stakeholder resource is the sum of actors (internal or external to the organisation).

The map further illustrates the hierarchy/classifications of knowledge assets:

**Stakeholders Relationship:** This is the classification of the knowledge assets encompassing all forms of relationships of the company with its stakeholders. The relationships exist in the form of

financial relationships, partnering agreements, contracts and arrangements about distribution channels, licensing agreements, customer loyalty, firms' names and brand image. The above therefore constitute and represent a fundamental link between a company and its stakeholders.

**Human Resources:** This component of the knowledge map is made up competencies possessed by the employees of the organization. They could be in the form of skills, known-how, commitment, motivation and loyalty including varying advises or value added tips that could transform the business including education, attitude and entrepreneurial spirit.

**Capital Employed:** This is the aggregate of physical infrastructure comprises all infrastructure assets which include structural layout and information and communication gadgets such as computers, servers and physical networks.

**Culture:** This classs defines the corporate culture and management philosophies portrayed as organizational values, networking practices of employees as spelt out by mission goals. Culture as a veritable constituent of this framework is defined as the organisational way of interpreting events that encourages individuals to operate both as an autonomous entity and as a team to achieve the company's objectives.

**Practices and Routines:** This aspect of the map encompasses the internal practices, virtual networks and routines namely the tacit rules and procedures including management style. Practices and routines are fundamental and define how processes are being handled and how workflow processes from through the organization. Marr & Schiuma(2001) further submit that the rise of the knowledge economy means that Intellectual Property(IP) owned by a company is likely to determine its future economic success because IP offers differentiation between products and often holds the key to fast growth in market share and premium profit.

In line with the above explanations, intellectual capital will be measured using Human Capital, Structural Capital and Capital Employed in consonance with Value Added Intellectual Coefficient

Model that was propounded by Pulic in 1998 which is widely adopted by other studies in assessing the effect of Intellectual Capital on firms' corporate values.

**2.1.5 Corporate Valuation:** This means the appraisal of the worth of a business organization. The process of business valuation will entail an undetanding of the value creation process in a company by appreciating the various value-drivers and their effect on the company's future cash flow and other bottom-line effect (The Institute of Cost and Works Accountants of India, 2010).

**2.1.5.1 Indices used in Measuring Corporate Valuation:** In line with the study the following indices will be used to define and measure corporate value in this study. They are: In view of this, the bases for corporate valuation will be assessed based on the dependent variables of this study namely: Price-Earnings(P/E) Ratio, Market-Book Value(M/BV) Ratio, Earnings per Share(EPS), Net Assets per Share(NAPS) Value, Gross Revenue per Share(GRPS) and Share Price(SP) of firms. Many studies that have adopted one or more of these indices in studying the effect of Intellectual Capital on Firm Valuation(Anuonye, 2015; Berzkalne & Zelgalve, 2014; Pouraghajan, Ramezani, Mohammadzadeh, 2013; Henry, 2013; Banimahd, et al, 2012; Rahman, 2012).

**Price Earnings Ratio:** Price Earnings ratio is the ratio of the market price per share to the earnings per share of a firm. The effect of IC on corporate valuation will be appraised using the Price Earning Ratio per Share.

**Market to Book Value:** This is the Market Value of Shares as represented by the current market price in the stock exchange divided by the total amount of the ordinary shareholders equity as represented by the net worth of the shares. It is therefore the ratio of market price per share to book value of the firm. It will be employed in the assessing the effect of Intellectual capital on corporate valuation(M/BV).

**Earnings per Share:** Earnings per Share is the amount attributable to the ordinary equity holder of a firm.  The study made use of the basic earnings per share and will be employed in ascertaining the extent effect that IC can have on corporate valuation index of EPS.

**Net Assets per Share:** A company's Net Asset per share is the book value is the value of its shareholders' equity. The effect of IC on corporate valuation will be ascertained using the  Net Assets per Share.

**Gross Revenue per Share:** This index explains the total revenue  that is attributable to a unit of ordinary share of a firm at a particular time. The proxy will be used to assess the extent of effect that IC can have on firms' corporate valuation index of  Gross Revenue per Share.

**Share Price:** The Share Price is the value at  which the share of a firm is traded at any particular time in the Stock   Exchange. It is also refered to as the Market Price per Share. The effect of IC on corporate valuation will be appraised  using the  firms  Share Price .

**2.1.6 Effect of Intellectual Capital on Price/Earnings Ratio of Firms:** According to Ike-Ekweremmadu (2014), it indicates how much an investor pays for every naira of the firm's earnings. The relationship between Intellectual Capital and  Price-Earnings ratio is argued by many to have shown divergent results. According to  Malik, Aslam & Latif  (2012) firms could strive for a more competitive advantage through enhancing values that could support favourable P/E Ratio from IC operations and customer relationships.  Firms can also  leverage on relational capital via loyalty programs for customers, sales rewards for intermediaries and prompt payment to suppliers and this can will contribute positively to a firm's values.  Again, the third party loyalty some firms enjoy could trigger an appreciation of the Price and Earnings of such companies through the stock exchange transactions. Mondal & Ghosh (2012) note that developing structural capital components such as effective database could reduce cost and can therefore enhance profitability and earnings attributable to shares. Companies that invest in research and development are usually rated better and considered to have potentials for sustainability and informed investors are usually disposed to

paying for the intellectual capital premium that is well defined by a firms' P/E Ratio (Djamil, et.al. 2013). Henry(2013) argue that an effective interaction between the human capital, structural capital and relational capital will no wonder lead to creation of value which lead to a premium attached to prices of goods of such firms. The IC potentials of a firm no wonder will have a toll on its Price Earnings Ratio.

**2.1.7 Effect of Intellectual Capital on Market to Book Value Ratio of Firms:** The IASB(2010) in noting the place of IC in the enhancement of firms' market to book value ratio states that the difference between the market value of an entity and the carrying amount of its identifiable net assets may capture a range of factors that affect the value of an entity part of which is intellectual capital. Edvinsson & Malone (1997) also attributed the gap often observed between firm's book and market value as Intellectual Capital(IC) while Kok(2007) in Maditionis, et al.(2011) argue that a method for determining the intellectual (intangible) assets of a company is to compare market to book value of the firm.

Effective management of intellectual property could lead to the appreciation of the market value of the company to enhance the corporate value of M/BV Ratio. IC can positively affect Market to Book Value(Trisnowati & Fadah, 2012). The positive interaction between human resource capital, structural capital and relational capital leads to positive significant Return on Assets, Market to Book Value Ratio and Total Productivity in Taiwanese firm in 2001(Wang, 2011). Pouraghajan, Ramezani, Mohammadzadeh(2013) aver that there is a positive and significant relationship between VAIC with M/BV Ratio and between Value added of Capital Employed and Value Added of Structural Capital with M/BV Ratio while there is no significant relationship between Value Added of Human Capital and M/BV Ratio. On the other hand, the work of Firer & Stainbank (2003) discover a negative relationship between IC and business performance of South Africa Economies and came to the conclusion that IC has no positive influence on analysts and investors. Likewise, the study of Kujansivu & Lonnqvist (2007) do not find clear evidence of the relationship

between IC and company performance of Finland companies. Banimahd, et al(2012) could not establish any relationship between IC(Value Added Intellectual Capital) and the components of business performance(Market to Book Value).

**2.1.8 Intellectual Capital and Firms' Earnings per Share:** Earnings is profits after tax which is attributed to ordinary shares (Emekekwue, 2014). Earnings per share explains that earnings which is attributable to one unit of naira invested in the business by a shareholder(Anuonye(2015). Earnings are therefore argued to have been stimulated when components of intellectual capital are judiciously utilized. Brookings (1996) as cited by Sofian, et al.(2011)postulates that 62% value of companies were formerly represented by physical capital and 38% IC but that the inverse has become the case since 1991.

Intellectual Capital has substantial impact on financial information especially with respect to firms' earnings. The incorporation of Intellectual Capital and properly articulating it as an asset will provide investors and others alike with the actual earnings attributable to firms Darabi, Rad & Ghadiri (2012). A positive relationship exists between Intellectual Capital and stock return. Firms with greater intellectual capital had better earnings Chen, Chen & Hwag (2005) as cited by Djhamil,et.al.(2013). However, intellectual capital( human capital, structural capital and relational capital) have positive but statistically insignificant impact on the earnings per share of the firms in Nigeria(Anuonye, 2015). It can therefore been inferred that the judicious use of intellectual capital could positively affect the firms' earnings capabilities.

**2.1.9 Intellectual Capital and Firms' Net Asset per Share/Book Value:** A company's Net Asset per share is the book value is the value of its shareholders' equity (Milost, 2013). Book value only represents the value of the physical assets and the value of certain but limited-intangibles such as software and patents. The IASB(2010) recognized only some intangibles such as copyrights, patents and externally generated goodwill as qualifying for inclusion as intangible assets. Most

often, the market value of a firm is significantly higher than its book value(Boda & Szlavik,2007). The value of IC does not affect a company's book value, as the value of IC (human capital and relational capital) is not disclosed in the financial statements (Milost, 2013) and this therefore creates the gap between market and the net assets value attributed to firms.

Vafei,et al.(2014) asserts that the objective of the balance sheet is not to estimate the market value of firms as according to Andriessen(2001) in (Milost, 2013), there is no need to make book value equal to market value as it is impossible too. The increasing company value in most cases does not mean that the total book value of assets is growing with the same rhythm; moreover, the proportion of total book value of assets to company value is getting smaller as the company value grows. The value of IC, regardless of whatever definition is not disclosed and so does not affect a company's book value, as there are currently no models for valuating individual elements of IC (Milost, 2013). The net assets value is likely to grow as there is effective interaction between components of intellectual capital and net assets of firms.

**2.1.10  Intellectual Capital and Firms' Gross Revenue per Share:**   The public usually place higher values on companies with better intellectual capital efficiency(Chen, Chen & Yuchang, 2005). These companies are said to gain greater revenue growth.  Firms with greater intellectual capital had better growth in revenue, Chen, Chen & Hwag (2005) in Djhamil,et al.(2013).

Intellectual Capital   is significantly and positively associated with company's operating efficiency(Lu, Wang & Chang,2014 in Anuonye, 2015). Corporate value is positively correlated with intellectual capital(Daryee, et.al. 2011), IC provides a company with competitive edge and enables it to differentiate itself from its competitors, (Brown, et al.2005).

**2.1.11 Effect of  Intellectual Capital and Firms' Share Price:** One approach is to valuing  a firm based on the value of its shares. This approach is known as the asset based stock and the information is extracted from the financial statement made up of the balance sheet and income statement. Another approach of valuing firm is to base it on the market value.   The firms' market

value, which is described as the number of shares, multiplied by the price per share (Milost, 2013). The firms' market value usually differs from the book value thereby creating a valuation gap between the book value and market value depicted by firms' market price per share. This gap is often attributed and can be filled with the value of Intellectual capital (Henry, 2013; Boda & Slavik, 2007; Salman, et.al. 2012). Market value of the firm is the price a prospective buyer of shares is ready to pay. Djhamil, Razafindrambina & Tandean(2013) submits that IC does not affect the current stock price but will contribute to the growth of stock concurrently with dominant external factors.

Skimmer & Sloan(2012) argue that investors with high expectation about the prospects of stock return growth will incur lower stock return when the expectations are not met while Patelis (1997) posits that future stock return will primarily affected by monetary policy shock and expected dividend growth. Appauhami(2007) in his research on the banking sector in Thailand suggests that there is a significant positive relationship between firm's IC and investors' capital gain on shares.

Renita(2007) in Sofian, et al.(2011) while studying 'Value of Research and Development(R&D) reporting among United States(US) and United Kingdom(UK) firms. The report noted that in the US s' Generally Acceptable Accounting Practice(GAAP), all costs were immediately recognized as expenses and the UK and in almost all other countries. The report further revealed that in almost all other countries, capitalizes development costs and expensed off as research cost. The study submits that research and development costs increase the value relevance of market price of share.

Stanfield (2005) in Saeed, et al. (2013) argue that the market value of the leading organizations is much higher than their book value, this difference he interpreted as IC and includes the intangible assets that unlike physical assets which are often excluded from the traditional balance sheet. Several other scholars have tried to look at the relationship between firm market value and Intellectual capital. Market value of firms may have been because of numerous attributes posed by the firm that have helped to create value and even enjoy competitive advantage. These advantages

have helped firms especially those that leverage on high-technologies and knowledge to in the recent past record market values which are quite above their market value (Milost,2013; Okpala & Odogwu,2010; Benzklane & Zelgalve, 2014).

Salman, et al.(2012); Salman, Yahaya &Olarewaju(2012) in Anuonye, 2015; Chatzoudes, Chang & Hseih(2011); Ahangar(2011); Tsairidis & Theriou(2011) in Anuonye, 2015; Okpala & Odogwu(2010); Appuhami(2007); Yalam & Coskun(2007) and Ting & Lean(2008), while employing  VAIC model in studying  value relevance of intellectual capital assets  submit that intellectual capital does positively impact  in both companies' financial performance and market capitalization. Pucci, Simon & Zanni(2013) submit a positive direct relationship between company's IC value and performance.

Low(2000) identified the importance of non-financial intangibles (IC) on company's performance submitting that improvement in critical intangible resources result in increased market value. In their studies Besharati,et.al.(2012) submited that IC does not have  a meaningful relation with market value. The study by Mehralian, Rasek, Akhavan & Sadeh(2012) also failed to support the impact of  IC on market value while Tanideh(2013) indicate no significant relationship between IC and corporate value.

Intellectual capital has been said to account for the present stock prices for which many firms market value which is denominated in their prevailing market price. According to Okpala & Odogwu(2010), the quality of human capital which is a major component of intellectual capital is a major factor determining the value of a firm's stock and investment decisions. In line with this assertion, Swartz, Swartz & Firer (2006) made a study on whether Intellectual capital together with information from financial statement can explain the market value of firms (share prices). They study revealed that abnormal earnings, the net book value of assets , abnormal dividends and intellectual capital all prepare information relevant to the share prices. Renita(2007) in Salman, et al(2012) in her study submits on reporting of Research and Developments (R&D) and its impact on

value relevance of market price, earning and book value. The study concluded that R & D increase the value relevance of the market price of shares, earnings per share and book value.

According to Sofian et. al, (2011) knowledge intensive economy during the last two centuries, the service based industries take the major share in value creation. He further submits that in knowledge-based economy, IC plays vital role in firm's overall growth and becomes the major source of competitive advantage over competitors. In another submission, Brookings(1996) submitted that IC almost represents 62% of a company value as portrayed in its physical capital and 38% intellectual capital. The institute however observed that the ratio has changed to 62%:38% in the favour of Intellectual Capital(IC). Following from the afore mentioned submission, it is obvious that IC has substantial impact on financial information especially with respect to firms' earnings(Sofian, et. al., 2011) as Intellectual capital is identified as an integral part of value-creating process (Anuonye, 2015; Henry,2013). IC therefore remains at the basis of value creation for firms that invested in them.

**2.1.12 Integrating Intellectual Capital into Corporation Valuation: The International Accounting Standards Board (IASB) Views**

Though most accounting authors have recognized and attributed the growing difference between firms' book value and market value to the 'invisible assets' that were not reported in the balance sheets, the accounting profession only accorded the place of this all important aspect recognition only recently through IAS 38 in 2006. That is, the IASB standard on Intangible Assets. The standard specifies that an entity can identify and recognize any assets if the future benefits are attributable to assets being directly to the entity and if the costs are credibly assessable. Thus, this pronouncement was many opportunities for making intangible assets such as known-how, customer capital, structural capital and so on visible in the financial statements. IFRS 3 further creates an opportunity to test the relevance of IC models and reduce the information asymmetry between IC Accounting and Financial Accounting (Roselender & Fincham, 2001 in Oba, et al.(2013).

Diverse studies have emphasized the yearning requests by investors and analysts for information that indicate a substantial difference between the type of information found in company's' annual reports and the type demanded by the market (Eccles, et.al., 2001 in Oba, Ibikunle & Damagum, 2013). To this end, Bukh(2002) in Salman, et al(2012) argues that companies, investors and analysts requests more reliable information such as managerial qualities, expertise, experience and integrity, customer relations and personnel competencies. Scholars have also demonstrated intense support for the disclosure of knowledge assets arguing that the accounting system will lose its relevance should accounting regulations fail to adjust to the increasing need of supplying pertinent information on intellectual capital investment (Dumay, 2012).

Bontis(2001) identified Skandia an insurance company as the first company to measure its knowledge assets in 1994. The company's report consists of human and structural capital involving 112 metrics to measure five areas of focus namely: financial, customer, process, renewal and development and human capital, which is named "Navigator" Model. Guthrie & Petty(2000) in Milost(2013) postulate another approach to measurement of intellectual capital. Theirs was a content analysis that entailed coding information contained in annual reports in line with established framework of intellectual capital indicators.

Hendriksen & Breda (1992) in Ekwe(2012) submits that intangible assets are the result of deferrals of expenditures on services as opposed to expenditures on property noting that these assets are known as deferred charges while others are the traditional intangibles. Intangible assets can be broadly classified into namely:

i. Traditional intangibles (Brand Names, Copyrights, Licences, Patents);

ii. Deferred charges (Advertising, Promotion, Authors' advances, Computer Software, Development Costs, Organisation Costs, Training Costs).

The IASC while pronouncing the standard on Intangible Assets expressed concern over three main issues namely: Whether internally generated intangible assets should be recognized at all in the Statement of Financial Position and if they were to be recognized, if the recognition criteria for these internally generated items should differ from recognition criteria for eternally acquired assets; if an intangible asset's fair value could be reliably determined and if the value of intangible asset should be amortized and over what period.

The adoption of IFRS 3 requires that goodwill would not be eligible for amortization and was considered an asset with indefinite life. The standard states that book value of goodwill was subject to impairment testing at the level of Cash Generating Unit (CGU) or group CGUs of the consolidating entities while all intangibles not meeting the criteria of identifiability including separability, control and future economic benefits were to be derecognised as assets and dispensed. The IASC in IAS 38 defined Intellectual assets as an "identifiable non-monetary asset without physical substance held for use in the production or supply of goods and services, for rental to others or for administrative purposes. It identified an asset as a "resource" which has the following attributes an enterprise has controlled or has control over because of past events. ii. Future economic benefits are expected to flow to the enterprise"

According to the definition:
(1) An intangible asset is identifiable such that it can be clearly distinguished from goodwill and the control aspect is very pertinent. The standard envisages that when an enterprise has insufficient control over the expected future economic benefits arising from the set of skilled manpower and from training, problems could arise in identifying and designating it 'intangible asset'. This concern of the IASC specifically affects management or technical expertise as they argues that it may not qualify as intangible assets, unless such assets are protected by legal rights to guarantee that their use will grant the enterprise the future economic benefits to be derived therein.

(2) On relational or customer assets, the standard further asserts that "in the absence of legal rights to protect or other ways to control, the relationship with customers or the loyalty of the customers to the enterprise, the enterprise usually have insufficient control over the economic benefits from customer relationships and loyalty to consider that items (such as portfolio customers, market shares, customer relationships, customer loyalty) meet the definition of intangible assets(IASC,1998).

(3) On the Form: An asset is separable if the enterprise could rent, sell, exchange or distribute the specific future economic benefits attributable to the asset without also disposing of future economic benefits that flow from other assets used in the same revenue earning activity.

(4) The standard also demand that intangible assets are recognized at cost when and only if it is probable that the future economic benefits that are attributable to the asset will flow to the enterprise and that the cost of the asset can be measured reliably.

(5) The standard further states categorically that some forms of intangibles are excluded from recognition. This class is made up of internally generated goodwill, brands, publishing titles, customer lists and other items similar in substance. The foregoing depicts some stringent requirements for items that could be designated "intangible assets".

**2.1.13 Defining What Constitutes Investment in Intellectual Capital**

The OECD has been in the vanguard of producing standard practice to guide investments in Intangible assets. OECD (1992) "Intangible investment cover all long term outlays by firms aimed at increasing future performance other than by the purchase of fixed assets". Croes(1997) as cited in Ekwe(2012) however faulted the definition arguing that it has low statistical connotations. According to him, it does not specify what actually constitute intangible investment, though it does mention the goal of the investments, he argues that 'future performance' needs further explanation. However, Vosselman (1992) in Ekwe(2012) addressed the challenges of OECD when they posit that factors contributing significantly to the growth of firms or nations without being included in the traditional category of fixed assets should be recognized as intangibles.

Vosselman(1992) in Ekwe(2012) sees intangible investments as the cost of intangible products that remain in use for more than one year. Croes(1997) as cited by Ekwe(2012) described Intangible investments as all new goal-oriented activities to a firm or disembodied tools used by a firm on a strategic and tactical level, during the reference period. Tactically, they are aimed at quantitative change or extension of existing knowledge, while on the strategic level; they are aimed at the acquisition of completely new knowledge. The study refers to services or output indicators of these services that can be bought from third parties or produced for their own use and normally embrace a certain degree of risk and identified them as marketing, technological, informational and organizational activities or tools, while the activities or disembodied tools have to be separately identifiable and measurable in financial terms and reflected by expected pay-off in the near future. Intangible investments are assets concerning the stock of knowledge or power on the market or strength of internal organization, often measured by their expenditures, occurring in the present. It includes purchases of small tools or minor activities, which are not capitalized and considered expenditures on an operational level and are, included under current expenditures, but out rightly excludes assets acquired through restructuring (Vafei,Taylor & Ahmed, 2014).

**2.1.14 Justifications for Integrating Intellectual Capital in Corporate Valuation**

Intellectual capital, which has been defined in various ways with some milestone, achieved on the fact that its disclosure in financial statements will enhance quality of accounting information (Boda & Szlavik, 2012) submitting that most organizations do appreciate the importance and application of Intellectual Capital Accounting in their organisations. Wang (2011) argues that pharmaceutical industry is consistently making more investment in order to protect their intellectual property rights and enhance their research and development capacity. The Generally Accepted Accounting Principles recognize expenses of intellectual development as period cost and written off in the period it is incurred. Boda & Szlavik(2007) argue that this cost are accounted against the revenue of the period's expenses therefore decreasing the period's profits.

According to Amir & Lev(1996), financial reporting which mainly assesses the tangible assets of corporations is to some extent losing value relevance especially in industrial sector that are dominated by knowledge-intensive and innovative organisations. Boujelbene & Affes(2013) defines human capital as comprising of the knowledge, professional skills, experience and innovativeness of employees within an organisation, while structural capital consists of the structures and processes employees develop and deploy in order to be productive, effective and innovation. Bullen & Eyler(2011) defined Human Resource Accounting as involving accounting for the company's management and employees as human capital that provides future benefits. Human Capital is defined as the knowledge that individuals acquire during their life and used to produce goods and services or ideas in the market or non-market circumstances(Barker, 2003). Parameswaran & Jothi(2005) submit that human resource accounting can be examined from investment in human resource and the value of human resources. They note that they are comprised of those investments/expenditures that are incurred for creating, increasing and updating the human resource quality of an organisation. These investments encompases two key issues namelythe productive capacity arising from knowledge and the utility and improving methods of assessing the productive capacity of human capital.

A firm's value is made up of contribution from the various components of its asset portfolio. Physical assets and monetary and monetary assets generate income, profits and cash flows by enabling it to produce market and sell its goods and services. On, the other hand, certain types of assets does not have immediate and measurable payoffs. These investments are done to enable the firm to produce goods or services sometimes in the future but the outcomes are subject to much uncertainty. Thus these investments are intended to secure and exploit future growth opportunities.

Thus: Firm Value = Value of assets in place

+ Value of future growth opportunities from assets already in place

+ Value of future growth opportunities from new assets.

A patent resulting from investment in Research may represent the second component and Development while the third component that may be discovered from future investments that may be embarked upon. The second and third components are largely partly dependent and derive from the firm's accumulation of resources and capabilities from past investments although occasionally, a firm may chance upon these growth opportunities.

## 2.1.15 Value Added Intellectual Coefficient (VAIC) Model for Measurement of Firms' Intellectual Capital

VAIC model was developed by Pulic(1998) and subsequently modified in 2000 and 2004. VAIC as a model measures the value creation efficiency of firms by finding the coefficients of human, structural and capital employed as intellectual components of the firm (Anuonye, 2015). According to Salman, et al. (2012) it as a method of assessing the efficiency of intellectual (intangible) assets.

This model is used to measure Intellectual Capital indicators thereby assessing the value added as a symptom of value creation by human capital, structural capital and physical and financial capital(Banimahd, et al. 2013; Berzkalne & Zelgalve, 2014; Saeed, et al,2013). It gives a new insight to measurement of value creation and monitors the value creation efficiency in company's' production resources via tangible and intangible assets (Shiu, 2006) while all data used in the model are extracted from financial statements and therefore are objective (Banimahd, et.al, 2013).

VAIC model identifies three components of organizational resources, which determine the performance of those organizations. Anuonye(2015) noted that VAIC calculation is done to generate a benefit on one hand as well to determine the market value of the firm on the other. These components are the physical capital employed, the intellectual capitals, which are broken down into human capital and structural capital of the organization. The method was developed by Public in 1998 and expresses the value added in the following equation:

$$VA = I + DP + D + T + M + R + WS$$

Where VA = Value Added for the firm and is computed as the sum of Interest Expenses (I); Depreciation Expenses(DP); Dividends(D); Corporate Taxes(T); Equity of Minority shareholders in net income of subsidiaries (M) and profits retained for the year (R); Wages and Salaries.

Alternatively, VAIC can be calculated by deducting operating expenses (materials, maintenance, and other external costs) from operating revenues (Pulic, 1998).

VAIC is calculated through five steps:

1.     To determine the competence of a company in creating Value added (VA) , the difference between output and input should be calculated that  OUT- IN= VA

       Where:

OUT(Output) includes the overall income from all products and services sold in the market;

IN(Input) articulates  all expenses for operating the company. Value Added(VA) results from how current  business and related resources (Human Capital, Structural Capital and Capital Employed) are used or employed and also determine how much new value has been created by one unit of investment on Capital Employed.

2. Secondly is to determine how much new value that one unit of investment in Capital Employed (including physical and financial) has created

Thus: VA/CE = VACA

 Where VACA= Value Added Capital Coefficient

3. Thirdly, is to assess the relationship between the VA(Value Added)  and Human Capital Employed in order to show how much has been created and added by one financial unit invested in employees.

Thus: VA/HC = VAHC

Where VAHC = is the Value Added Human Coefficient.

Furthermore, Pulic(1998) propounds that Structural Capital(SC) is calculated when Human Capital is deducted from value added with HC and SC in reverse order.

4. To find the association between VA and SC, indicating the share of SC in creating value.

Thus: SC/VA = STVA

**Where:**

STVA =  Value Added Structural Capital Coefficient

5. To assess each resource that helps to create Value Added.

VAIC = VACA+VAHC +STVA

Where  VAIC = the Value   Added  Intellectual  Coefficient,  indicates  corporate  value  creation efficiency

VAIC can also be calculated by

 VAIC= HCE+ SCE+ CEE

VAIC= HCE +SCE + CEE( VAIC modified by Shiu(2006) and Firer and Stainbank(2003)

**Where**:

 VAIC= VAi Intellectual Coefficient for Company i;

HCEi = VAi/HCi ; Human Capital Coefficient for Company,i;

SCE =  SCi/VA ; Structural Capital VA for the Company;

CEEi= VAi (VAi/CEi; VA Capital Employed Coefficient for Company i;

VAi= Ii(Sum of Interest Expenses) + Dpi( depreciation expenses) + Di(dividends) + Ti(corporate

taxes+ Pi( profits retained for the year).

HCi= Total investments in salaries and wages for  company i;

SCi= VA - HCi; Structural Capital for the company i;

CEi= Book Value of the assets for company i.


The VAIC model is developed to assess and evaluate the efficiency in adding value(VA) to a company's total resources while each major resource components focuses on value creation in an organization and not on cost control(Pulic,2000 as cited by Salman, 2012). This method has been widely accepted and applied by many intellectual capital researchers  (Firer & Stainbank, 2003;

Ahangar 2011; Salman, et al 2012, Henry, 2013; Anuonye, 2015 among others) because of this wide acceptance and because the method has the potential of practical applicability, it is therefore chosen as the method for calculating intellectual capital this study.

**2.1.16 Other Models for Measurement of Intellectual Capital:**

Intellectual capital has been variously described as a pivot to the success of many organisations especially the high-tech and communication industry industries, (Saeed, et al, 2013; Salman, et al(2012). A number of measurement bases have been advocated for the measurement of intellectual capital at firm level with no consensus yet. Researchers and academics have continued to contend with this challenge. Some of the models for Intellectual Capital measurement are as follows:

**2.1.16.1 Tobin's Ratio:**

Tobins(1969) in Anuonye(2015) developed an investment demand model in which net investment depends on the ratio of the market value of an asset to its replacement cost. The Q ratio otherwise known as Tobin's ratio explains the value of capital relative to its replacement cost (Tobin, 1969) in Anuonye(2015). It is a ratio that measures and helps to predict investment decisions independents of macroeconomic factors such as interest rates. Tobin's Q submits that high Q ratio and market-to-book ratios reflect the value of investments in technology and human capital (Stewart,1997). Tobin's Q is essentially the same as the market-to-book ratio except that Tobin used replacement cost of tangible assets rather than book value of tangible assets in calculation. The use of replacement cost neutralize many of the difficulties with the market-to-book ratio (Luthy, 1998 in Saeed, 2013).

Tobin's Q Ratio Equation

Q= MV/BV

Where MV= is the Market Value;

BV = Book Value

As a matter of rule if Tobin's is greater than the market value, then the market value is greater than the book value of company assets; the market may be overvaluing the company. On the other hand, if Tobin's Q less than 1, then the market value is less than the book value of assets, the market may be undervaluing the company (Berzklane & Zelgalve). A positive Q ratio value can be ascribed to the intangible value of intellectual capital which is not captured by traditional accounting systems (Luthy, 1998). If the Q ratio is less than 1, an asset is worthless than the cost of replacing it, and it is unlikely that a company will buy more assets of that kind. If on the other hand Q ratio is greater than 1, companies are likely to invest in similar assets that are worth more than their replacement cost (Stewart, 1997).

Using Tobin's Q instead of market to book ratios neutralize the effects of different depreciation policies which vary from company to company and country to country (Roos, et. al., (1998); Stewart (1997). Empirically testing of the model generally employs the average q ratio as market value instead of marginal q as the model suggest. The justifications of the use Tobin's Q is by showing that under certain assumptions investment is determined by average q. These assumptions are namely; that production function and adjustment cost function exhibit constant return to scale; product and factor markets are perfectly competitive and that the stock market is strongly which means that not even company insiders can consistently beat the market.

Tobin's Q is the most revealing when like companies are compared over a period of several years. It measures the result of human activity over time as expressed in the market value of a firm. Although it is a fairly onerous exercise to estimate the replacement cost of the tangible assets used in the denominator of the calculation, current market values a firm whose shares in public markets, are relatively easy to obtain (Stewart, 1997). Tobin's Q is ratio of two stocks of value, a market valuation of a firm and there placement value of its assets. It is a measure at a point in time and there is no rate of change rate of change between those two points. Greenspan is while trying to link Q ratio to measurement of IV asserts that high Q ratios reflect the value of investment in technology and human capital, there does not appear to be any empirical evidence linking to

Tobin's Q to any underlying cause. In addition, since the Q ratio is based on share prices and could lead to increased shareholder value.

**2.1.16.2 Market Value Added (MVA):**

MVA consider the sum of initial capital invested and the economic profit or residual income or EVA accumulated over time and is based on economic profits as developed in the 19th century.

Market Value Added calculated as the difference between the market value of a company (both equity and debt) and the capital that lenders and shareholders have entrusted to it over the years in the form of loans, retained earnings and paid-in capital. MVA is therefore a measure of the difference between the amount the investors have contributed (cash inflows) and what they could get by selling their contributions at present prices (cash out flows). Following from the above, positive Market Value Added calculated shows that the company has increased the value of the capital invested in it and thus shareholders' wealth while a negative MVA shows that the company has destroyed wealth, Performance Rankings(1999) as cited by Ekwe, (2012). Bontis, et. al (1999) submit that maximizing the spread between the cash that firm's invest since company's inception and the present value of the cash that can be realized from the disposal of the shares, corporate managers maximize the wealth of the company's shareholders relative to other uses of capital.

**MVA is calculated thus:**

Market Value of Equity plus Market Value of Debts less Total Adjusted Capital

**Where:**

**Market Value of Equity** = The total outstanding number of shares multiplied by the share price.

**Market Value of Debts** = The total outstanding debts of a company multiplied by the market value of that debts.

**Total Adjusted Capital** = The balance sheet total adjusted for a few accounting peculiarities such as Last in First out (LIFO), reserves, notes payable, present value of operating leases, deferred

taxes and the total amount of goodwill expensed to date, using both an operating and financing approach.

Market Value Added is also used in benchmarking market performance between companies. In order to have a comparable MVA, a standardized MVA is calculated by dividing the change in MVA by the adjusted equity value at the beginning of the year (Evans, 1999 in Ekwe,2012).

**Standard MVA** = Change in MVA for the year divided by the Adjusted Equity at beginning of year.

Market Value Added measures are extracted from historical performance. However, it is fairly easy to obtain a current estimate for a firm whose shares and debt trade in public market and who have recently published financial statements. MVA is by definition a measurement of a stock of value: the difference between a market valuation of a firm and its book value at a given point in time. There is no rate of change or flow component. Comparing MVA at the end of two different periods could result in an average rate of change in MVA between the two points in time. MVA could be however argued to provide a cumulative measure of human value-adding activity, but does not appear to be any empirical evidence linking to MVA to any underlying cause while the claim that MVA causes increased shareholders' value still needs revalidation.

**2.1.16.3 Economic Value Added Model:** The Economic Value Added Model has its root in traditional accounting, as it is the difference between company's net operating income after taxes and its cost of capital of both equity and debts Stewart Stern in Chen & Dodd(2001). It defines the place of residual profits in the measurement of Intellectual Capital. Residual income concept can be attributed to Marshal(1890). He defines economic profit as total net gains less the interest on invested capital at the current rate (Wallace, 1997 in Ekwe, 2012). In accounting theory/discipline the concept of residual income appeared first in Scovell in 1924 and was first recorded in management accounting field in 1960's (Dodd & Chen, 1996 in Ekwe, 2012).

Stewart and Company had utilised the Economic Value Added (EVA). They had advocated that it should be used instead of earnings or cash from operations as a measure of both internal and external performance, Biddle, Browen & Wallace, 1997 in Ekwe(2012). EVA as a model came to the limelight in September 1993 following a publication of an article in the Fortune Magazines. The article provided a detailed description of the EVA concept and Stern Stewart's practice and successful EVA adoption by major corporations in the USA. Other models, which have its offshoot from the Economic Value Added (EVA), are as follows:

Shareholder Value Added (SVA), Adjusted Economic Value Added (AEVA) , Refined Economic Value Added(REVA), Discounted Economic Profits(DEP) and Economic Value Management. These models were products of adjustments of EVA Model (Mokeloinen, 1998 in Anuonye (2015). The Economic Value Added (EVA) model operates by discounting to the present value that portion of the company's future earnings attributed to the IC (human resources) of the firms, Ezejelue and Ofobuike(1981) & Amah(2002).in Ekwe,(2012) This model however has two major constraints namely the challenge of defining the discount rate to be used as this cannot be determined by a high degree of objectivity and again the challenge of apportioning the earnings to all the factors of production involved such as patents, finance and capital goods.

EVA value measurement is based on the traditional accounting. EVA value is calculated as the difference between firms operating income after tax and cost of capital of both equity and debt, Stewart (1997) & Chen & Dodd (2001). EVA employs the use of the economic profit, which is computed from the accounting profits. Computing EVA income values require some adjustments, which may not be needed in traditional accounting. For instance, Funds utilized on Research and Development would be expensed under the traditional accounting but this is rather capitalized over the period it is expected to yield future economic benefits (Stewart, 1997; Evans, 1999).

Specifically, Economic Value Added (EVA) is calculated thus:

EVA = Residual income (RI) + Accounting Adjustments

Where: RI = Net Operating Profits after Taxes (NOPAT) – Capital Charge

NOPAT = Earnings before Extraordinary Items (EBEI) + After Tax Interest

EBEI = Cash flow from Operations (CFO) + Accruals

ATint   =  Net Interest Expense x (I – Rate)

CapChg = The charge for use of capital. It includes interest on the debt plus a charge for the equity capital based on a cash equivalent equity multiplied by a cost of equity.

**Source:**  Chen and Dodd(2001) as cited by Anuonye(2015)

The computation of Economic Value Added will lead to the determination of earnings that can be equivalent to cash and compared to returns to a capital base that is also expressed in cash equivalent terms.  According to Biddle, et al., (1997) as cited in Ekwe, 2012 the implicit assumptions guiding the use of   EVA   is firstly that the future value of a firm is a function of historic reports or activity and secondly that equity valuation is ultimately the discounted present value of future  cash flows from and EVA is ultimately still based on historic events. Economic Value Added is a measurement of a stock's Value Added measured over a period of one year with no indications of the rate of change in value addition during the year. However, comparing EVA for two different periods running could result in an average of change of the values computed.

Empirical studies however does not appear to support the assertion that EVA is linked to share value.  For instance, Biddle, et. al, (1997)  in Ekwe,(2012) while  reviewing Stewart's claim that EVA is superior to earnings in its association with stock returns or with firm values could not establish that EVA significantly out-perform Earnings before Extraordinary Items (EBEI) in tests of relative information content instead in most of the   evidence suggests that earnings out-performed EVA. Again, the charge for capital and Stewart's adjustments for accounting distortions show some marginal evidence of being incrementally important and this difference could not be economically significant (Biddle, et al., 1997 in Dumay, 2012 ).

Chen & Dodd (2001) in Ekwe(2012) while examining the value relevance of some three profitability measures: Operating income, residual income, and economic value added (EVA).

Their study revealed that all the variables have little information content in terms of value relevance and this contradicts the claim of EVA advocates as they suggested that the data did not support the assertion that EVA is the best measure for valuation purposes which is consistent with prior studies that submitted that accounting based information explains little of the variation in stock returns to firms. Chen & Dodd(2001) submits that if firms desire to more closely align organizational metrics with stock value a measurement paradigm other than the Economic Value Added may need to be developed. It could be inferred that though EVA as propounded by Stewart, there are still some challenges in adopting the method in firm valuation.

**2.1.16.4 Skandia's Intellectual Capital (IC) Navigator:**

The Intellectual Capital Navigator concept was the brainchild of Leif Edvinsson a Swede. While working in a Swedish financial services company, Skandia, led the team that invented the Skandia Intellectual Capital Navigator (Edvinsson & Malone,1997). Edvinsson combined Sveiby's work with Kaplan and Norton's Balanced Score Card in developing the first Skandia supplement of Intellectual Capital in 1994(Sveiby, 1998). It incorporates the presumption that intellectual capital represents the difference between market and book value of the company (Edvinsson and Malone, 1997). Despite the weakness of Skandia's IC Navigator, most researchers agree that Skandia's considerable efforts to create taxonomy to measure a company's intangible assets emboldened others to look beyond traditional assumptions of what creates value for organizations. Petty concludes, "Edvinsson's work was very much about the process" (Petty & Guthrie, 2000 in Saeed et. al.2013).

The total market value of a firm is equal to its financial capital plus its intellectual capital. The components of intellectual capital are Human Capital; Structural Capital can be deconstructed into organisational capital and customer capital. Organizational capital can in turn be deconstructed into innovation capital and process capital (Edvinsson & Malone, 1997). Figure 2.3 further illustrates the opinion of (Edvinsson and Malone, 1997).

**Fig. 2.3 Skandia Market Value Scheme**

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                    ┌─────────────────┐
                    │  Firm's Capital │
                    └─────────────────┘
                       │           │
          ┌────────────┘           └────────────┐
          ▼                                     ▼
┌───────────────────┐              ┌───────────────────┐
│ Financial Capital │              │ Intellectual Capital │
└───────────────────┘              └───────────────────┘
                                        │           │
                              ┌─────────┘           └─────────┐
                              ▼                               ▼
                    ┌───────────────┐              ┌───────────────────┐
                    │ Human Capital │              │ Structural Capital │
                    └───────────────┘              └───────────────────┘
                                                      │           │
                                          ┌───────────┘           └──────────┐
                                          ▼                                  ▼
                                ┌───────────────────┐           ┌────────────────────┐
                                │ Customer Capital  │           │   Organizational   │
                                └───────────────────┘           │      Capital       │
                                                                └────────────────────┘
                                                                   │              │
                                                       ┌───────────┘              └──────────┐
                                                       ▼                                     ▼
                                            ┌────────────────────┐           ┌────────────────────┐
                                            │ Capital Innovation │           │  Process Capital   │
                                            └────────────────────┘           └────────────────────┘
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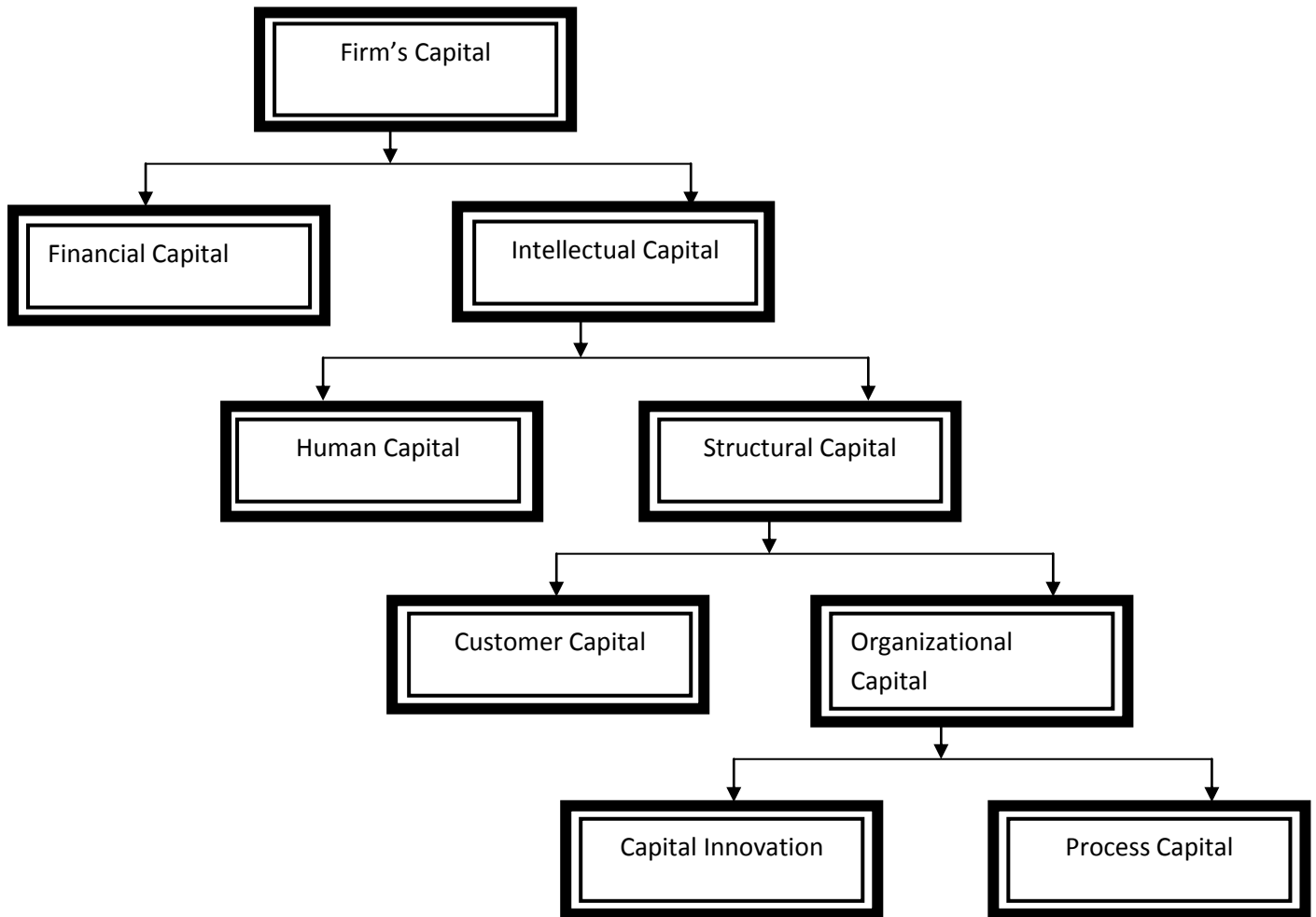
**Source:** Edvinsson and Malone (1997)

Organizational intellectual capital is the overall common Intellectual Capital measure of a company. It is calculated by multiplying an efficiency coefficient (I), by an absolute monetary Intellectual Capital measure. The efficiency coefficient is the arithmetic mean of the "Intellectual capital coefficient of efficiency indices", - a set of percentages derived by culling out redundancies

and applying some subjective judgment. While the absolute monetary measure, is equal to the sum of "about two dozen indices" measured in monetary terms (Edvinsson & Malone, 1997).

The Skandia Navigator approach takes into account the same set of financial, operational, and customer concerns as the Balanced Score Card. But, it makes more explicit the need to consider the organization, its structure and processes for nurturing its employees (Shand, 1999 in Anuonye,2015).

**2.1.16.5 The Intellectual Capital Audit**

The Intellectual Capital Audit is a historic document designed to measure a firm's IC at a specific point in time, and makes no prediction of the future. The IC Audit has its focus on assets and stock. There does not appear to be any empirical evidence that using the IC audit leads to better economic performance.

## 2.1.17 RESEARCHER'S CONCEPTUAL FRAMEWORK:

### 2.1.17.1 Lucy's Intellectual Capital Efficiency Guage (LICEG)

**Human Capital Indicators (+VE):**

Enhanced quantitative hiring

Increased staff training

Acquisition of IC property

Enhanced experience, known how competence

Enhanced staff welfare packages

**HumanCapital Indicators(-VE):**

Poor management/ staff relationship

High staff turnover

Increased absenteeism

Poor management/union relationship

**Relational Cap. Indicators, (+ VE):**

Existence for a no. of years

Increased brand awareness among customers

Site quality (user friendly website)

Increased citation of coy's websites

Favourable office location

**Corporate Valuation Indices:**

P/ER

M/BV

EPS

NAPS

GRPS

SP

**Relational Cap. Indicators (- VE):**

Fairly young organisation

Shrinking brand awareness among customers

Poor site quality/ unfriendly websites

Unfavourable office location

**Structural Capital Indicators (+VE):**

Increased number of software and/ documentation

Increased number of patents and copyrights

Robust enterprise planning system

Increased coordinated r and d expenditure.

**Structural Capital Indicators (-VE):**

Decreased in the number of software and documentation

Decreased in patents and copyrights

Poor enterprise planning b system

Decreased and poorly coordinated R and D

**Source:** Adapted from Pulic Ante, 2015

**Explanation of Lucy's Intellectual Capital Efficiency Guage (LICEG)**

Sequel to the review of the literature and the identified gap, the study has propounded a model known as 'Lucy's Intellectual Capital Efficiency Guage'. The model adapts the Pulic's Value Added Capital Efficiency to create a guage, which is based on Human Capital Indicators, Structural Capital Indicators and Customer/Relational Capital Indicator as enumerated in Fig 2.4 below. The frame work shows how favourable or unfavourable the investments on the three components of intellectual capital could effect on corporate valuation variables of the firms namely on Price-Earnings Ratio (P/E), Market to Book Value Ratio(M/BV), Earnings per Share(EPS), Net Asset per Share(NAPS), Gross Revenue per Share(GRPS) and Share Price. When the IC indicator is positive, it adds value to the identified independent variable and the guage indicates as such and when the indicator is negative, the guage would also show a reduction in the shareholder's values created as elicited by the dependent variables.

**2.17.2 Extended Value Added Intellectual Efficiency Model (EVAIEM)**: This model seeks to integrate the Relational Capital into the Pulic Ante thereby expanding the variables that could be added to arrive at Value Added Intellectual Efficiency. Thus as proposed in the Lucy Intellectual Capital Guage.

Extended thus:

EVAIEM = HCE+SCE+CEE+RCE .

**Where:**

HCE= Human Capital Efficiency

SCE= Structural Capital Efficiency

RCE= Relational Capital

Relational capital includes all the firms' relationships with customers, suppliers, intermediaries, representatives, partners, owners and lenders (Roos, et al 1997). He further argued that building relational capital through loyalty program for customers, sales rewards for intermediaries and

prompt payment to suppliers would contribute much to a firm's value because it increases third party loyalty to the firm.

Relational Capital can be calculated as investment and expenses which organisations spend in building brand loyalties, sales rewards and commissions, advertisement and brand promotion.

**Demonstration of the Extended VAIC.**

A firm, Hawwer Nigeria Limited, has:

HCE=2.995;

SCE= 0.786;

CEE= 2.584

RC= 1.55

This can be summed up, thus:

Extended VAIC= HCE +SCE+RCE

2.995 +0.786+2.584 +1.55 = 7.915

**2.2 Theoretical Framework**

The Knowledge-Based View of the Firm Theory and The Resource-Based View of the firm Theory are very pertinent to this study. However, The Knowledge-Based View of the Firm Theory underpins this study.

**2.2.1 The Knowledge-Based View of the Firm Theory:** The Knowledge Based-View of the Firm Theory was propounded by Stalk (1992) as cited by Marr and Schiuma (2001). The theory assumes that the competitive ability of any firm is based on capabilities and competencies which are driven by knowledge. According to (Marr and Schiuma, 2001), organisational capabilities are based on knowledge and since knowledge is a resource that forms the foundation of company capabilities, the ownership of specific knowledge provides organization with specific capabilities. They noted that the possession of knowledge enables specific capabilities, and hence only the

management of the knowledge  will help an organisation identify, maintain and refresh its competencies in the short and long run(Leonard-Barton, 1992; Prahalad & Hamel, 1990 as cited by Surdarsanam, et al.,2013) .  This study can therefore be related to this theory as the knowledge acquired by firms  are the Intellectual Capital and the firms can grow their values based on  the knowledge by harnessing its Human Capital(HC), Structural Capital(SC) and Customer/Relational Capital.

**2.2.2 The Resource-Based View of the Firm (RBV) Theory:** Resource-Based View Theory  is also related to this study. RBV is attributed to Penrose (1959) and later modified by Rumelt, 1984; Barney, 1991 and 1995; Dierick & Cool, 1989 as cited by Stiles & Kulviachana (undated). RBV establishes the importance of organisation to build valuable resources, bundle them together in unique and dynamic way to achieve firms' success.  The theory also emphasize that competitive advantage is dependent not only on traditionally resources such as natural resources, technology or economies of scale because they are increasingly being easily imitated. Rather, the theory assumes that competitive advantage is dependent on the valuable, rare and hard to imitate resources which reside within an organisation noting that intellectual  capital is an  'invisible asset'(Itami, 1987).

Hamel & Prahalad (1990) opine that human capital also supports the emphasis in strategy research which is anchored on 'core competencies' where economic rents are attributed to 'people- embodied skills'. Wright, Dunford and Snell(2001) however note that the increasing importance of Resource-Based View (RBV) Theory as it promotes human resource management in general and human capital management in particular. This efforts has  brought  about  the convergence between of  the strategy  with human resource management. The resource based view of firm theory gave rise to the "Knowledge-Based View of the Firm Theory''(Grant, 1991).

However, we consider The Knowledge-Based View of the Firm Theory more apt for this study as it is particular about the relationship between firms' knowledge abilities, competitive advantage and value creation which is the thrust of this study.

**2.3 Empirical Literature**

Intellectual capital has been argued to be a key resource for companies to enhance competitive advantage and at the same time improve their corporate image in the global market (Salman, Mansor, Babatunde and Tayib, 2012). However, there still exists many arguments towards the value creation claims with no resolution on the issues yet. While some scholars strongly believe that intellectual capital positively impact corporate values, some studies have found no relationships between IC and firms' values while some post that there is negative correlation between the two. This section reviews the divergent views as articulated by these previous authors. The reviews is done in line with the hypotheses of the study:

**2.3.1 Effect of Intellectual Capital on Price Earnings (P/E) Ratio of Firms**

Amir & Lev(1996) conducted a study on fourteen(14) cellular telephony providers in USA for ten(10) year period, 1984-1993. The study revealed that intangible assets contribute to the price and earnings value of the firms. It further shows that earnings, book values and cashflows are largely irrelevant on a stand alone basis when valuing companies in the cellular telephone industry. They therere concluded that the information on the intellectual capital significantly influence the price and earnings value of the high technology companies and even sector of growth generally.

Clark, Seng & Whiting(2010) used Pulic VAIC model examined the effect of intellectual capital on firms' performance in Australian listed companies between 2004 and 2008. The study revealed that there is a direct relationship between intellectual capital and performance of Australian publicly banking sector.

Salman, Mansor, Babatunde & Tayib(2012) investigated Intellectual Capital and corporate performance in Nigeria. The study's sample size 20 listed service companies in the manufacturing

industry. The work adopted the Value Added Intellectual Coefficient Model. The results indicate that Intellectual Capital has positive and significant impact on corporate performance of the firms studied.

**2.3.2 Effect of Intellectual Capital on Market to Book Value Ratio of Firms**

Amir & Lev(1996) conducted a study on fourteen(14) cellular telephony providers in USA for ten(10) year period, 1984-1993. The study revealed that intangible assets contribute to the market value of the firms and current accounting rules do not allow recording of the items as assets. In view of this information provided in the financial statement is useless to investors when valuing the firms with large amounts of intangible assets. Their study further reveals that book values and cashflows are largely irrelevant on a stand alone basis when valuing companies in the cellular telephone industry. They therere concluded that the information on the intellectual capital significantly influence the value of the high technology companies and even sector of growth generally.

Firer & Stainbank(2003) on 'IC and traditional measures of corporate performance African companies, used the VAIC Model but could not establish any significant correlation between IC and firms' value and financial performance'. The study investigated the relationship between the efficiency of the value added by the major components of a firm's resource base (physical capital, human capital and structural capital) and three traditional performance measures namely: profitability, productivity and market value.

Samilogu(2006) studied the relationship between value added intellectual coefficient(VAIC) and Market to Book Value Ratio in the Turkish banking sector. Data were sourced from the financial statements of banks listed in the Istanbul Stock Market from 1998-2001. The results showed that there was no significant relationship between the dependent variable(M/BV) and independent variables, HCE, SCE and CEE. The study submits that there is significant correlation between dependent variable ratio of market value to book value and the independent variable (VAIC) three

components namely, human capital, structural and relational capital. The study used a sample of 75 South Africa public traded companies, but empirical results failed to support any relationship between the three values added efficiency components and three dependent variables market value). The findings however suggests that physical capital(tangible assets) remains the most significant underlying resouce of corporate performance, firms pay the least importance to structural capital. On the other hand, market reacts negatively to firms that concentrate solely on the enhancement of human assets.

Tseng & Goo (2005) adopted the VAIC model, using structural equation modeling to test the influence of Intellectual Capital on company performance. The study examined the relationship between IC components and corporate value of Taiwanese manufacturing companies. The result revealed that there is positive relationship between intellectual capital and corporate value.

Maditinos, Chatzoudes, Tsairidis and Theriou(2011) studied the impact of Intellectual Capital on firms' market value and financial performance. Using 96 firms listed under 4 economic sectors at the Athen(Greece) Stock Exchange covering a period of 3 years 2006-2008 and employed VAIC model of Pulic, 2000. The research revealed that there is a negative and significant relationship between structural capital and M/B ratio. The correlation analysis reveals that there a positive and significant relationship between Market to Book Value and the three components of VAIC, human capital efficiency. Ferraro & Veltri, (2011) in Anuonye (2015) concluded in his study that intellectual capital variables do not have meaningful relationship with market value.

Mehralian, Rasekh, Akhavan & Sadeh(2012) study the impact of Intellectual Capital Efficiency on Market Value: An empirical study from Iranian Pharmaceutical Companies. The study adopted the Pulic VAIC Model, Six- year cross-sectional time-series data were obtained from the audited financial reports in Iranian Stock Exchange. Analyses were done using correlation and multiple regression analytical tools. Analyses indicate that IC can explain profitability but not productivity and market valuation in Iran.

Pouraghajan, Ramezani & Mohammadzadeh(2013) studied the impact of IC on Market Value and Firm's Financial Performance: Evidence from Tehran Stock Exchange. A total of 140 firms belonging to eight(8)economic sectors in Tehran Stock Exchange were used for the study. Data were collected for the period of 2006-2010 and sourced from the database of Tehran Stock Exchange. Analysis was done using the Pearson's Correlation and Multiple Regression. The study reveals that there is a positive and significant relationship between VAIC with M/B Ratio and between Value added of Capital Employed and Value Added of Structural Capital with M/B Ratio while there is no significant relationship between Value Added by Human Capital and M/B ratio.

Ngari, Gichira, Aduda & Waititu(2013)did a study on topic titled "Analysis of the relationship between Intellectual Capital Accounting and Business Performance of Pharmaceutical Companies in Kenya". To do this study, the researchers formulated three hypotheses. With a target population of eighty nine (89) local pharmaceutical manufacturing companies, a sample size of 31 companies qualified for the study as they were the only ones that has been licensed by Pharmacy and Poisons Board and this signifies a 35% of the total population. Data were collected through a 5-Scale Likert structured questionnaire administered to 31 pharmaceutical companies.

Multi-Regression Analysis Tool, Analysis of Variance(ANOVA) and Pearson Bi-Variate Correlation Coefficient Technique were used to test the hypotheses. The report shows that intellectual capital accounting has positive relationship with business performance; however, human capital was the most prominent of intellectual accounting.

Godyn(2013) studied 'Intellectual Capital Valuation and Stock Performance in an Era of Financial Tumoil : A Study of Blue Chip Banks Listed in Stick Exchanges of Visegrad Countries'. The study was conducted on nine(9) listed large banks concentrated in particular national stock exchanges in Parague, Budapest, Warsaw and Bratislava. Data were sourced from Bloomberg Terminal Platform covering a seven(7) year period (2006-2012) and intellectual capital methods based on market

capitalization. The study adopted Market to Book Value Ratio(M/BV), Market to Value Added(M/VA) and VAIC ratio for calculating Intellectual Capital.

Analysis show that the relationship between M/BVand share price is positively correlated. The relationship between MVA and the share price of listed banks is even higher and positively correlated. However, the relationship between VAIC Ratio and the share price indicate that share price is correlated to the value of VAIC ratio. Human capital efficiency indicates a stable and smooth position for most of the banks because of low volatile human capital values. Banks witnessed a decrease in the structural capital efficiency within the period studied.

### 2.3.3 Effect of Intellectual Capital on Earnings per Share of Firms

Amir & Lev(1996) conducted a study on fourteen(14) cellular telephony providers in USA for ten(10) year period, 1984-1993. In view of this information provided in the financial statement is useless to investors when valuing the firms with large amounts of intangible assets. Their study further reveals that earnings are largely irrelevant on a stand alone basis when valuing companies in the cellular telephone industry. They therere concluded that the information on the intellectual capital significantly influence the value of the high technology companies and even sector of growth generally.

Chen,Chen & Yuchang(2005) investigated the relationship between value creation efficiency and firms' market valuation and firms financial performance in Tiwan Stock Exchange. The study reveals that IC had a positive impact on on financial performance as measured by earnings.

Firer & Stainbank(2003) on 'IC and traditional measures of corporate performance African companies, used the VAIC Model but could not establish any significant correlation between IC and firms' value and financial performance'. The study investigated the relationship between the efficiency of the value added by the major components of a firm's resource base (physical capital, human capital and structural capital) and three traditional performance when measured by profitability(Earnings).

Samilogu(2006) studied the relationship between value added intellectual coefficient(VAIC) and Market to Book Value Ratio in the Turkish banking sector. Data were sourced from the financial statements of banks listed in the Istanbul Stock Market from 1998-2001. The results showed that there was no significant relationship between the dependent variable(M/BV) and independent variables, HCE, SCE and CEE. The study submits that there is significant correlation between dependent variable ratio of market value to book value and the independent variable (VAIC) three components namely, human capital, structural and relational capital. The study used a sample of 75 South Africa public traded companies, but empirical results failed to support any relationship between the three values added efficiency components and three dependent variables market value). The findings however suggests that physical capital(tangible assets) remains the most significant underlying resource of corporate performance, firms pay the least importance to structural capital. On the other hand, market reacts negatively to firms that concentrate solely on the enhancement of human assets.

Tan, Plowman & Hancock(2007), using Value Added Intellectual Coefficient Model examined the relationship between Intellectual Capital and firms' performance. 150 listed companies in Singapore Stock Exchange were used for the study. Findings reveal that there is a positive relationship between intellectual capital and companies' performance. Result submit that IC is correlated to future company's performance while the rate of growth of a company's intellectual capital has positive relationship with company's performance . However the contribution of IC to company performance differ from industry to industry.

Kujansivu & Lonnqvist (2007) investigated the value efficiency of Intellectual Capital but could not establish clear evidence on the relationship between Intellectual Capital and company performance among Finland companies.

Volkov & Garanina (2007) examine the importance of intangible assets in knowledge-based economy. Their study made use of forty-three(43) Russian companies and covered five year

period(2001-2005). The study used econometric models to test the relationship between the explanatory variable and dependent variable. Findings confirms the assertion that the workforce is the main asset of a company and more so in knowledge-based companies.

Yalam & Coskun (2007) conducted an empirical study on Intellectual capital(IC) and financial performance of the banking sector of Istanbu Stock Exchange. The study reveals that there is a strong correlation between Intellectual Capital and Value Added Efficiency with profitability as measured by earnings per share.

El-Bannany(2008) investigated the determinants of intellectual capital performance in UK banks over the period 1999-2005. The findings reveal that the standard variables of bank's performance. The results also show that investment in a information technology systems, bank efficiency, barriers to entry and efficiency of investment in intellectual capital variables which have not been considered in previous studies have a significant impact on intellectual capital performance.

Gan & Saleh(2008) examined the relationship between Intellectual Capital and corporate performance of technology-intensive firms listed on Bursa (Malaysia) Stock Exchange by investigating whether value creation efficiency when measured by VAIC can be explained by market valuation, profitability and productivity. The study concludes that VAIC can explain firms earnings.

Ting & Lean (2008) examined Intellectual Capital (Value Added Efficiency) on financial performance of Malaysian companies. The study reveals that Intellectual Capital Value Efficiency is associated with profitability of sampled companies.

Puntilo(2009) used Value Added Intellectual Coefficient Model to study the relationship between value creation efficiency, firms' market valuation and financial performance on the Traditional Western Economy. Data were drawn from banks enlisted in tha Milan Stock Exchange, Italy. Result failed to show any positive significant association between IC and the dependent variables.

The study further however revealed a positive relationship between capital employed efficiency and the dependent variables studied.

Rehman, Rehman & Zahid (2011) appraise IC and its impact on corporate performance among companies in Pakistan using VAIC components of human capital, capital employed and structural capital. The result showed that one of the most important components of IC is Human Capital Efficiency which helps to boost financial performance of firms.

Vafaei,Taylor & Ahmed (2011) in their article "The value relevance of intellectual capital disclosure". The study sought to examine whether or not listed company disclosure of intellectual capital is value-relevant in share market and to assess its moderating role in the value relevance of reported earnings and equity following the adoption of IFRS. The study adopted a content analysis based on annual reports sampled from listed companies in Britain, Australia, Hong Kong and Singapore were incorporated to a model to examine the direct and moderating roles ICD in a firms valuation. The study reveals that ICD is positively associated with the market price (has value relevance) in companies in two of four countries and in non- traditional industries., however, the incremental value relevance of earnings and net assets is mostly non-significant, however, the article submitted that the interaction of these variables with ICD considerably increases the basic coefficient and explanatory power the models.

Zou & Huan(2011) examined the impact of intellectual capital on the performance of listed banks in China. Their study reveals that Capital Employed Efficiency(CEE) and Structural Capital Efficiency(SCE) have negative correlation with Technical Efficiency(TE) using the Data Envelopment Analysis(DAE), while Human Capital Efficiency(HCE) has a positive correlation with TE.

Mehralian, Rasekh, Akhavan & Sadeh(2012) study the impact of Intellectual Capital Efficiency on on Market Value: An empirical study from Iranian Pharmaceutical Companies. The study adopted the Pulic VAIC Model, Six- year cross-sectional time-series data were obtained from the audited financial reports in Iranian Stock Exchange. Analyses were done using correlation and

multiple regression analytical tools.  Results further reveal that physical capital was the one which was having major impact on profitability(earnings) of the firms.

Ekwe(2012) examined the relationship between human resource accounting and financial performance in the Nigerian Banking Sector'. Six banks  were used for this study while the study covered six years.  Six hypotheses were tested with Spearman Rank Correlation Coefficient and the Stepwise Model of Multiple Regression statistical tools. Analysis reveals that there was   positive and insignificant relationship between components of VAIC and growth in revenue. The study further shows that there is a positive and significant relationship between VAIC components and Market/ Book Value ratio.

Trisnowati & Fada(2012) examined 'The impact of Intellectual Capital on Bank's Market Value and  Financial Performance on Indonesia Stock Exchange'.  The study used the Linear Regression in doing data analysis. Results of the study showed that Intellectual Capital  had no significant effect on both firm's Market Value and Growth of Revenue. Value Added of Capital Employed had only significant effect on Return on Equity while  Value Added of  Human Capital  had no significant effect on both  the firm's market value and financial performance. Structural Capital Value Added had significant effect on all measurement of financial performance.

Salman & Mahamad(2012) in Anuonye (2015) reviewed the some of the available measurement tools that can be applied to evaluate the knowledge- based assets using management models and market models in the Malaysian economy. Their study reveals that the motive behind the development of intellectual capital measurement is to allow managers to evaluate their investments in intellectual capital assets as well as their contriburion to company performance.

Rahman(2012) posits a guide on the assessment of the value added impact of components, which it notes are primarily human and structural capital on measures of productivity, profitability and market value of a firm by employing the VAIC technique.

Kehelwalatenna & Gunaratne(2012) in Pouraghajan, Ramezani & Mohammadzadeh(2013), investigated relationship between IC with ratio of market value to book value and financial

performance in production and service parts of firms accepted at Colombo (Sri Lanka) Stock exchange between 2002-2006. The study reveals that there is positive and significant relationship between IC with ROE ratio and also between components of IC with M/B( ratio of market value to book value of equity) in the service part. However, in the production part, there exists a positive and significant relationship between IC with ROE ratio and between HC with M/B ratio while structural capital has inverse and significant relationship with M/B ratio.

Darabi, Rad & Ghadiri(2012) appraised the relationship between Intellectual Capital and Earnings Quality. The sample size  of the study consist of 158 companies quoted at the Tehran Stock Exchange.  Data  were collected from the manual archive of  the TSE'S Library. The data were analyzed using both the Ordinary Least Square  and Panel Data Research Design.  The result of the analysis shows that there is significant relationship between the IC and Earnings Quality. The result also shows that Intellectual Capital  is negatively related to the absolute  Discretionary Accruals so IC positively affects earnings quality.

The study further reveals that among the different components of IC only human capital components is significantly associated  with Earnings Quality and thus there exists a negative relationship between HC and absolute value of Discretionary Accruals so this component of IC positively affect Earnings Quality. Again, CE  and SC have no significant relationship with Earning Quality.

Djhamil, Razafindrambinina  & Tandeans(2013) studied the impact of IC on  firms stock return: Evidence from Indonesia.  25 banks listed in the Indonesia Stock Exchange for a period spanning 2005-2009. Secondary data were collected from the annual financial statement while data were analysed using the multiple regression statistical tool.  The result shows that VAIC significantly affect stock growth rate.

Mojtahedi(2013)   studied Intellectual Capital Accounting and its Impact on Organizational Financial Performance: Evidence from Malaysian Firms. The study which explored the relationship

between intellectual capitals and financial performance in one hundred and fifty Malaysian Firms over a period of 12 years (2000-2011) was based on the concept of Value Added Intellectual capital. Three hypotheses were formulated based on three proxies namely: Earnings Per share (EPS); Return on Capital Equity (ROCE) and Growth of Annual Sales(GS). Intellectual capital were calculated and analyzed. Data were collated from the financial statements of the afore mentioned years. Multiple Regression and panel data analysis were used to predict the impact of IC on financial performance.The study indicates that the relationships between IC and financial performance of Malaysian companies as shown by earnings per share is positive, significant and informative.

Deep & Nawal(2014) studied Intellectual Capital and its Association on Financial Performance of Indian Textile Sector. The study was based on ten-year data(2002 to 2012). The corporate annual reports used were the profit and loss account and balance sheets of the selected companies were extracted from CMIE prowess database. VAIC Model was applied for measuring intellectual capital of the companies. The correlation coefficient and OLS regression were used for the study. Results reveal that intellectual capital in the textile sector has significant positive relationship only with profitability of the companies. Analysis also indicate that physical capital was the one that has major impact on the profitability of the firms over the period of the study.

Anuonye (2015) examined Intellectual Capital measurement using the Earnings per Share Model of Quoted Insurance Companies in Nigeria'. The sample size of the study used 59 insurance companies in Nigeria. It covered a 5 period spanning 2005- 2009 and used Least Square Method or Simple Regression to assess the direct and indirect relationships between IC and Earnings per Share. The results reveal that human capital, structural capital and relational capital have a positive and statistically insignificant impact on the earnings per share of the firms studied in Nigeria.

**2.3.4 Effect of Intellectual Capital on Net Assets per Share of Firms**

Amir & Lev(1996) conducted a study on fourteen(14) cellular telephony providers in USA for ten(10) year period, 1984-1993. The study revealed that intangible assets contribute to the worth

artibutable to share  of the firms and current accounting rules do not allow  recording of the items as assets. In view of this information provided in the financial statement is useless to investors when valuing the firms with large amounts of intangible assets. Their study further reveals that  net assets per share  values and cashflows are largely irrelevant on a stand alone basis when valuing companies in the cellular telephone industry. They therere concluded that the information on the intellectual capital significantly influence the value of the high technology companies and even sector of growth generally.

Tseng & Goo (2005) adopted the VAIC model, using structural equation modeling to test the influence of Intellectual Capital on company performance. The study examined the relationship between IC components and corporate value of Taiwanese manufacturing companies. The result revealed that there is positive relationship between intellectual capital and corporate value.

Puntilo(2009) used Value Added Intellectual Coefficient Model to study the relationship between value creation efficiency, firms' market valuation and financial performance  on the  Traditional Western Economy. Data were drawn from banks enlisted in tha Milan Stock Exchange, Italy. Result failed to show any positive significant association between IC and the dependent  variables. The study further however revealed a positive relationship between capital employed efficiency and the dependent variables studied.

Muhammad & Ismail(2009) studied the relationship between  Intellectual Capital  and traditional economic measures of Malaysian banks. The result show that banks with satisfactory performance had low Intellectual Capital  coefficients.

Rehman, Rehman, Rehman &  Zahid (2011) appraise IC and its impact on corporate performance among companies in Pakistan using VAIC components of human capital, capital employed and structural capital. The result showed that one of the most important components of IC is Human Capital Efficiency which helps to boost financial performance of firms.

Batainei & Al-Zoabi(2011) submitted that there was strong significant and positive influence between human and structural capital on competitive advantage and moderate significant and positive influences with relational capital.

Ong, Yeoh & Teh(2011) investigate the intellectual capital efficiency in Forty-Three(43) food and beverage companies listed in Malaysian Stock Exchange between 2008 and 2010. Using the VAIC(HCE,SCE,CEE), the outcome of their study revealed that the beverage companies have greater VAIC and intellectual capital efficiency when compared to food companies over the three year period.

Abdul, Kwon & Moon (2012) investigate factors instrumental to the success of Software 2015 industries in India, Ireland and Isreal in relation to the performance of Software 2015 firms in West Africa. The study proposed a second level model on the Software, 2015 industry and conducted a field survey comprising 83 Software, 2015 firms. The result of their study show that IC of the countries had contributed significantly to the success in the Software, 2015 industry while the result show a significant relationship between the elements of IC and competitive capabilities and firm performance.

Elena & Angel(2013) in a study on the contribution of IC to value creation among differential national market and industries using hedonic pricing framework. ANOVA was used as statistical tool. Result shows that IC contributes firm's value creation differs significantly between countries. The models(Short and Long-term) employed reveals a significant effect by the explanatory variable. Results show both positive and negative coefficient. HC plays a critical positive role in the value creation in the short-run. SC and relational capital becomes more relevant in the long run.

Aroh(2014) examined the impact of intellectual capital on organizational performance in Nigeria: A study of listed companies on Nigerian Stock Exchange. The study adopted descriptive research design. Primary data were therefore obtained through questionnaires which were administered to three hundred and seventy five (375) respondents chosen from the 182 companies. The study also

made use of secondary data extracted from annual reports and account of the sampled firm. Data were analysed using mean, variance and standard deviation. Pearson correlation coefficient was used to determine the combined effect of intellectual capital components on financial performance. The study revealed that Human Capital, Relational Capital and Innovation capital have positive relationships with financial performance. Results also show that there was a significant interaction between relational capital and company type but the strength of the relationship was stronger for non-service companies.

**2.3.5 Effect of Intellectual Capital on Gross Revenue per Share of Firms:**

Kujansivu & Lonnqvist (2007) investigated the value efficiency of Intellectual Capital but could not establish clear evidence on the relationship between Intellectual Capital and company performance among Finland companies.

Volkov & Garanina (2007) examine the importance of intangible assets in knowledge-based economy. Their study made use of forty-three(43) Russian companies and covered five year period(2001-2005). The study used econometric models to test the relationship between the explanatory variable and dependent variable. Findings confirms the assertion that the workforce is the main asset of a company and more so in knowledge-based companies.

El-Bannany(2008) investigated the determinants of intellectual capital performance in UK banks over the period 1999-2005. The findings reveal that the standard variables of bank's performance. The results also show that investment in a information technology systems, bank efficiency, barriers to entry and efficiency of investment in intellectual capital variables which have not been considered in previous studies have a significant impact on intellectual capital performance.

Gan & Saleh(2008) examined the relationship between Intellectual Capital and corporate performance of technology-intensive firms listed on Bursa (Malaysia) Stock Exchange by investigating whether value creation efficiency when measured by VAIC can be explained by market valuation, profitability and productivity. The study concludes that VAIC can explain productivity as explained by revenue of firms.

Rehman, Rehman & Zahid (2011) appraise IC and its impact on corporate performance among companies in Pakistan using VAIC components of human capital, capital employed and structural capital. The result showed that one of the most important components of IC is Human Capital Efficiency which helps to boost financial performance of firms.

Maditinos, Chatzoudes, Tsairidis and Theriou(2011) studied the impact of Intellectual Capital on firms' market value and financial performance. Using 96 firms listed under 4 economic sectors at the Athen(Greece) Stock Exchange covering a period of 3 years 2006-2008 and employed VAIC model of Pulic, 2000. Bridging and structural capital have positive and significant relationship with Revenue Growth while human Capital has reverse and significant relationship with Revenue Growth.

Abdulai, Kwon & Moon (2012) investigated the factors instrumental to the success of Software 2015 industries in India, Ireland and Isreal in relation to the performance of Software 2015 firms in West Africa. The study proposed a second level model on the Software, 2015 industry and conducted a field survey comprising 83 Software, 2015 firms. The result of their study show that IC of the countries had contributed significantly to the success in the Software, 2015 industry while the result show a significant relationship between the elements of IC and competitive capabilities and firm performance.

El-Alfy(2012) examined direct and moderating effect of firm specific human capital on the relationship between both efficiency and innovative capabilities on one hand and operational performance on the other hand. The result indicates a positive and significant and direct relationship between efficiency and operational firm performance. The result did not however indicate that HC and has moderating effect on firm performance as indicated by efficiency and innovative capabilities.

Javornik, Tekavcic & Marc(2012) studied more than 12,000 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 the rank of its financial  performance in the peer group.

Pouraghajan, Ramezani &  Mohammadzadeh(2013) studied the impact of IC on Market Value and Firm's Financial Performance: Evidence from Tehran Stock Exchange. A total of 140 firms belonging to eight(8)economic sectors in Tehran Stock Exchange were used for the study.  Data were collected for the period of 2006-2010 and sourced from the database of Tehran Stock Exchange. Analysis was done using the Pearson's Correlation and Multiple Regression.   The study submits that IC component has positive and significant relationship with market value and revenue growth.

Saeed, Shekoofeh & Mahnaz(2013) appraised the impact of Intellectual Capital on Financial Performance. The study made use of empirical data drawn from a panel consisting forty nine Iranian Companies listed in the Tehran Stock Exchange(TSE), classified in different into three different industrial sectors for ten years period(2001-2010). Three hypotheses were formulated with the dependent variables as Return on Equity (ROE), Growth in Revenue (GR) and Return on Assets (ROA). The study was based on the VAIC Methodology. the result of the study support most of the proposed hypotheses which means that the there is a significant and positive relationship between IC and ROE, ROA and GR. However the result submits that only the relationship between Value added efficiency of capital employed and value added efficiency of human capital with growth revenue is insignificant. It therefore submits that organizations can sustainable value with concerted investment in Intellectual capital, and that in the business context, organizations can achieve sustainable value with investment in Intellectual capital and by focusing on IC they can move from economy based on the tangible assets towards economy based on intangible assets.

Mojtahedi(2013)   studied Intellectual Capital Accounting and its Impact on Organizational Financial Performance: Evidence from Malaysian Firms. The study which explored the relationship

between intellectual capitals and financial performance in one hundred and fifty Malaysian Firms over a period of 12 years (2000-2011) was based on the concept of Value Added Intellectual capital. Three hypotheses were formulated based on three proxies namely: Earnings Per share (EPS); Return on Capital Equity (ROCE) and Growth of Annual Sales(GS). Intellectual capital were calculated and analyzed. Data were collated from the financial statements of the afore mentioned years. Multiple Regression and panel data analysis were used to predict the impact of IC on financial performance. The study indicates that the relationships between IC and financial performance of Malaysian companies  Growth in Sales) are positive, significant and informative.

**2.3.6 Effect of Intellectual Capital on Share Price of Firms:** In another study conducted by Lev in 2001 titled, 'Intangibles management, measurement and reporting'. The study suggests that there is a positive correlation between intellectual capital disclosure and market capitalization which is also likely to be a key motivator for listed firms to voluntarily adopt disclosure of intellectual capital.

Firer & Stainbank(2003) on 'IC and traditional measures of corporate performance African companies, used the VAIC Model but could not establish any significant correlation between IC and firms' value and financial performance'. The study investigated the relationship between the efficiency of the value added by the major components of a firm's resource base (physical capital, human capital and structural capital) and three traditional performance measures by market value(share price).

Chen,Chen & Yuchang(2005) investigated the relationship between value creation efficiency and firms' market valuation and firms financial performance in Tiwan Stock Exchange. The study reveals that IC had a positive impact on on financial performance and market valuation of the firms studied of the firms.

Samilogu(2006) studied the relationship between value added intellectual coefficient(VAIC) and Market to Book Value Ratio in the Turkish banking sector. Data were sourced from the financial statements of banks listed in the Istanbul Stock Market from 1998-2001. The results showed that there was no significant relationship between the dependent variable(M/BV) and independent variables, HCE, SCE and CEE. The study submits that there is significant correlation between dependent variable ratio of market value to book value and the independent variable (VAIC) three components namely, human capital, structural and relational capital. The study used a sample of 75 South Africa public traded companies, but empirical results failed to support any relationship between the three values added efficiency components and three dependent variables market value).

The findings however suggests that physical capital(tangible assets) remains the most significant underlying resource of corporate performance, firms pay the least importance to structural capital. On the other hand, market reacts negatively to firms that concentrate solely on the enhancement of human assets.

Tseng & Goo (2005) adopted the VAIC model, using structural equation modeling to test the influence of Intellectual Capital on company performance. The study examined the relationship between IC components and corporate value of Taiwanese manufacturing companies. The result revealed that there is positive relationship between intellectual capital and corporate value.

Tan, Plowman & Hancock(2007), using Value Added Intellectual Coefficient Model examined the relationship between Intellectual Capital and firms' performance. 150 listed companies in Singapore Stock Exchange were used for the study. Findings reveal that there is a positive relationship between intellectual capital and companies' performance. Result submit that IC is correlated to future company's performance while the rate of growth of a company's intellectual capital has positive relationship with company's performance . However the contribution of IC to company performance differ from industry to industry.

Appauhami (2007) investigated the influence of Intellectual capital(IC) components efficiency on capital gain of financial companies (banking, finance and insurance) in Thailand. The findings provide that there is a significant positive relationship between intellectual capital and capital gain of the financial companies.

Renita(2007) in Salman, Mansor & Babatunde (2012) studied 'Value of Research and Development(R&D) reporting' among US and UK firms. The report noted that in the US GAAP, all R & D costs were immediately recognized as expenses and the UK and in almost all other countries. The report further revealed that in almost all other countries, capitalizes development costs and expensed off as research cost. The study submits that research and development costs increase the value relevance of market price of share.

Gan & Saleh(2008) examined the relationship between Intellectual Capital and corporate performance of technology-intensive firms listed on Bursa (Malaysia) Stock Exchange by investigating whether value creation efficiency when measured by VAIC can be explained by market valuation, profitability and productivity. The study concludes that VAIC can explain failed to explain market valuation.

Puntilo(2009) used Value Added Intellectual Coefficient Model to study the relationship between value creation efficiency, firms' market valuation and financial performance on the Traditional Western Economy. Data were drawn from banks enlisted in tha Milan Stock Exchange, Italy. Result failed to show any positive significant association between IC and the dependent variables. The study further however revealed a positive relationship between capital employed efficiency and the dependent variables studied.

Muhammad & Ismail(2009) studied the relationship between Intellectual Capital and traditional economic measures of Malaysian banks. The result show that banks with satisfactory performance had low Intellectual Capital coefficients.

Okpala & Odogwu(2010) did a study on Human Capital Accounting and its relevance on stock investment decisions in Nigeria. The work used a 5-point Likert Scale questionnaire.

Questionnaires were administered to a sample size of 65 but had a return of 44 representing a 67.7% response rate. Data analysis were done with the aid of SPSS 16. Chi-square statistical tool was used to test the hypotheses at 5% alpha level. The study reveals that the quality of human capital is a major factor in determining the value of a firm's stock and investment decisions. Again, quality of management and employees are factors in investment decisions while stocks of companies with poor quality manpower and high staff turnover are high risk investments. The study concludes that the inclusion of human capital value in the balance sheet of organizations does help investors make more rational investment decisions.

Iranmahd(2010), studied the Effect of Intellectual Capital on Financing Costs and market value of firms in Tehran Stock Exchange. The studied covered a period of eight years. Value Added Intellectual Coefficient Model was used to measure IC. Value added of Intellectual Capital and value added of capital added applied were used in the calculation. Pearson Correlation, Univariate, Multivariate regressions and Z Wang were performed on the data. Result shows that the value added of capital applied , value added of intellectual capital and the value of capital coefficient negatively influenced weighted average average of capital, yet they have no effect on enterprise value.

Vafaei,Taylor & Ahmed (2011) in their article "The value relevance of intellectual capital disclosure". The study sought to examine whether or not listed company disclosure of intellectual capital is value-relevant in share market and to assess its moderating role in the value relevance of reported earnings and equity following the adoption of IFRS. The study adopted a content analysis based on annual reports sampled from listed companies in Britain, Australia, Hong Kong and Singapore were incorporated to a model to examine the direct and moderating roles ICD in a firms valuation. The study reveals that ICD is positively associated with the market price (has value relevance) in companies in two of four countries and in non-traditional industry.

Ferraro & Veltri, (2011) in Anuonye (2015) concluded in his study that intellectual capital variables do not have meaningful relationship with market value.

Mehralian, Rasekh, Akhavan & Sadeh(2012) study the impact of Intellectual Capital Efficiency on on Market Value: An empirical study from Iranian Pharmaceutical Companies. The study adopted the Pulic VAIC Model, Six- year cross-sectional time-series data were obtained from the audited financial reports in Iranian Stock Exchange. Analyses were done using correlation and multiple regression analytical tools. Analyses indicate that IC can explain profitability but not productivity and market valuation in Iran.

Maditinos, Chatzoudes, Tsairidiset & Theriou(2011) examined in 'The impact of Intellectual capital(IC) market value and financial performance of public listed companies in Greece'. The study reveals that Intellectual Capital components are significantly correlated with companies' financial performance.

Banimahd, Mohammadrezeai and Mohammadrezeai(2012) in a study titled "The impact of Intellectual Capital on Profitability, Productivity and Market valuation: Evidence from Iranian High Knowledge - Based industries." The research made use of data obtained from a sample size of 69 firms in high knowledge based industries listed in Tehram Stock Exchange from 2001 to 2008.

Rafei, Ghaffari and Parsapur (2012) examined the role of intellectual capital in the improvement of the performance of social and technological economy of Iranian hospitals. The study submits that there are some correlations between intellectual capital and performance.

Value Added Intellectual Coefficient (VAIC) Model was used to measure the intellectual capital index. Multiple linear regressions were applied to analyze ant test the research hypotheses. The findings suggest that the performance of a firm's intellectual capital can explain its profitability and productivity, but not market valuation. Further, the study established a positive relationship between firm size, leverage and physical capital intensity and their profitability and productivity. However, the results submit that except for firm size, there are not significant associations of these factors with market valuation. The researchers recommend that managers can raise firms'

performance by designing a plan to enhance IC, such as the plan of improving human capital performance by training and educating or employing new intellectual capital.

Dumay(2012) submits that empirical cases evidence is in intellectual capital and firm's performance is inconclusive and far from achieving a solid scientific consensus. The result of their studies show there is significant positive correlation among Intellectual components, Return on Assets and market value.

Ferchichi & Paturel(2013) examined the effect of intellectual capital disclosure on the value creation using Tunisian annual reports. The study examined the information value of intellectual capital on Tunisian financial market. The study did a content analysis of annual reports of 50 companies listed on the Tunisian Stock Exchange selected for the period 2006-2009. The study developed a weighted disclosure index based on the users' needs and expectation in order to estimate the relationship between Intellectual Capital and value creation.

The result indicate that the intellectual capital information is positively and significant correlated with firm value creation. The analysis also show that reporting on intellectual capital allows resolving uncertainty about the firm thereby improving an increase in value. The result confirms the pivotal role of intellectual capital in valuation of firms listed on the Tunisian Stock Exchange.

Besharati, Kamali, Mazhari & Mahdavi(2012) studied the relationship between Intellectual Capital and Innovation Capital with financial performance and value of companies in Tehran Stock Exchange. The study reveals that there is no significant relationship between Intellectual Capital and firm's value.

Chiucchi(2013) examines the role of those who design and implement intellectual capital practices. He employed Kolb's Experimental Learning Theory Model and opines that actors must complete an experimental learning cycle so as to enable them appreciate fully the contribution of intellectual capital in their organizations.

Mojtahedi(2013) studied Intellectual Capital Accounting and its Impact on Organizational Financial Performance: Evidence from Malaysian Firms. The study which explored the relationship between intellectual capitals and financial performance in one hundred and fifty Malaysian Firms over a period of 12 years (2000-2011) was based on the concept of Value Added Intellectual capital. Three hypotheses were formulated based on three proxies namely: Earnings Per share (EPS); Return on Capital Equity (ROCE) and Growth of Annual Sales(GS). Intellectual capital were calculated and analyzed. Data were collated from the financial statements of the afore mentioned years. Multiple Regression and panel data analysis were used to predict the impact of IC on financial performance. The study indicates that managing and reporting of intellectual capital assets will create value to the organization.

Tanideh(2013) study on ability of IC to create corporate values submits that there is no significant relationship between IC and corporate value.

Boujelbene & Affes (2013) in "The impact of intellectual capital disclosure on cost of equity capital: A case of French Firms". The study was based on companies listed in the French SBF 120 Stock Market Index. Two main hypotheses and three sub-hypotheses were formulated to guide the study. Annual reports for the year 2009 of French companies in the SBF 120 French Index: These companies have the most significant stock exchange capitalization, while elimination was done for foreign companies. The process got the sample size to 102 French companies.

Data relating to the Intellectual capital disclosure data were collected from the annual reports (reference documents) of 2009 of the companies found on the SBF 120 index for the year 2009. The study depicts support the hypotheses that stipulates the existence of a significant and negative association between intellectual capital disclosure with its two components (human capital and structural capital) and the cost of equity. However, the negative impact of the relational capital disclosure is not validated. The result therefore shows that managers of firms, the result show the benefits of enhanced IC disclosure regarding the reduction in their cost of capital.

Berzkalne and Zelgave(2014) examined Intellectual Capital and Company Value' . The study involved 65 Baltic listed companies over the period from 2005 to 2011. The study used correlation analysis to provide empirical investigation on the topic. Tobin's Q was used as a proxy for intellectual capital while the VAIC model was employed. The study finds that an increase in IC should increase the value of the company but empirically obtained mixed result. The result submits that there is statistically significant and positive relationship between IC and company value for enterprises in Latvia and Lithuania where as such correlation were not observed for companies in Estonia. It also finds that human capital efficiency can be used to calculate the IC , however, structural capital efficiency is not significant in the case of intellectual capital and company value.(Note that Baltic Listed companies represent different companies) .

Sumedrea(2013) show that in crisis the development of companies is influenced by the human and structural capital.

Kamath(2015) examined the impact of intellectual capital on financial performance and market valuation of firms in India. The investigation was carried out using thirty(30) firms S & P BSE selected across various manufacturing and service sectors. The analysis was carried for a period from 2008-2009 and 2012 – 2013 financial year. The Value Added Intellectual Coefficient Model was adopted for the study. Multi Linear Regression analysis was done on the data collected. Results reveal that financial performance and market value are influenced by the the intellectual capital of the firms.

Tripathy, Sar & Sahoo(2015) in their study entitled 'The effect of intellectual capital on firm's valuation: An Empirical Investigation with Reference to India'. Data for the study was sourced from Indian listed companies and Pulic's Value Added Intellectual Coefficient(VAIC) measure. A panel research design was adopted for the study while a ten year data cutting across seven industrial categories was used to test the relationship between intellectual capital efficiency(physical capital efficiency, human capital efficiency and structural capital efficiency).

Analysis indicate that the aggcregate impact has more influence on the firm's valuation using Market to Book Value ratio. Result also show that expenditure on innovative capital and relational capital captures additional information on structural capital and have a positive effect on firm's value contemporaneously. Result further reveals that in the presence of all the intellectual capital components, firms with greater innovative capital and relational capital in the ensuing year tend to have higher M/BV in the subsequent year. The study however fail to support the fact that after controlling for structural capital efficiency, the firm with greater innovative capital tend to have higher M/BV during pre and post 2008 financial crisis in general and across the indian industries.

## 2.4 Summary of Literature

From submissions above, conceptually, we deduce that Intellectual Capital is the knowledge that can be converted into value (Edvinsson and Malone, 1997). It could also be defined as an important resource for a company, which helps it to enhance its competitiveness and at the same time improve its corporate image in the global market.

Theoretically, this study is underpinned on the 'Knowledge-Based View of the Firm': This theory has one common concept which is encouraging development and investments in the intellectual capital via development of knowledge assets of firms as encompassed in Human Resources, Structural and Relational Capital. The theories as propounded are intended to foster the development of human intellect and abilities, provide the necessary data bases and other infrastructures that could ensure value creation could sustain the firms in the face of daunting competition and depression. They further note that these corporate value drivers should be incorporated and classified as an underlying value drivers and should be seen as enduring assets worthy of reporting in financial statements.

Empirical reviews reveal that the evaluation of the effect of intellectual capital on firms' valuation in Nigeria is still a contentious issue with most of studies on supporting the growing positive effect of IC on firms' value creation among which are Salman, et al 2012;Henry, 2013;

Ekwe,2012; Chang & Hseih, 2011; Ahangar, 2011; Appuhami, 2007; Yalam & Coskun, 2007 and Ting & Lean, 2008). However, there are still studies that show that IC has no correlation with performance and valuation while a few submitted an outright negative relationship like Firer & Stainbank, 2003; Besharati, et al, 2012.

There is also divergent view among scholars on the level of impact created by the various components of firms' value and hence the need for this study. Anuonye(2015) found positive and insignificant relationship between Intellectual Capital and Earnings per Share while Maditinos, et. al (2011) submits that only Human Capital is positively and significantly related to Market to Book value of firms.

## 2.5 Gap in Literature

From the fore going literature reviews, it is obvious that a number of studies have been done on the area of Intellectual Capital and financial performance of firms in the globe. Most of these reports however emanated and are domiciled outside the shores of this country specifically, the western world and few from Asia. The very few done in Nigeria aggregated the concept of market valuation as seen in share prices as the only proxy for corporate valuation. This study believes that there is need for a more in-depth study to appreciate in a more comprehensive manner the extent of effect that Intellectual Capital could have on corporate values of firms using some specific proxies namely: Price/Earnings Ratio(P/E), Market-Book-Value Ratio(M/B), Earning per Share(EPS), Net Assets per Share(NAPS), Gross Revenue per Share(GRPS) and Share Price.

The study also note that the few related studies carried out in Nigeria were tilted towards the banking industry(financial sector) and because of the nature of the financial sector, such findings may not be suitable to serve as a basis to generalize for all the firms in Nigeria. Again, a good number of the studies reviewed were mono-sector driven. A study of this nature is therefore imperative as it provides a comparative analysis for relating IC to specific sectors as well as the

whole quoted firms in the NSE. This study has therefore embarked on a cross-sectional study of Intellectual Capital impact on firms in Nigeria using both the knowledge based/information driven organisations(Non-Traditional) as well as the not so technological or knowledge based industries(Traditional industry). The essence of this is to draw inferences to serve different sectors of the economy which is missing from the studies reviewed.

Again, our choice of the dependent variables, though extensive, was to provide a platform for an all-encompassing report aimed at making this work very apt and valuable for diverse stakeholders namely: industry players, human resources managers, corporate valuation experts, the academia, and a whole lot of others. Industry managers will also to find this work apt for their decision making especially in the face of daunting competitions and fierce recession.

The study has tried to fill the above identified gap by studying the effect of Intellectual Capital on corporate valuation of quoted firms in Nigeria by identifying specific variables for Intellectual Capital(Human Capital, Structural Capital and Capital Employed) and s Price/Earnings Ratio(P/E), Market to Book Ratio, Earnings per Share(EPS), Net Assets per Share (NAPS), Share Price(SP) and Gross Revenue per Share(GRPS) while adopting Value Added Intellectual Coefficient (VAIC) as propounded by Pulic (1998).

# CHAPTER THREE

## METHODOLOGY

**3.1. Introduction:** This chapter shows the methodology adopted in conducting this study.. The methodology of the study comprise the reseach design of the study, the population of the study, the sampling and sampling techniques adopted. The chapter also spells out the methods of data collection, procedure for data analysis and model adoption and justification of methods.

Below is the details of the methodology:

**3.2 Research Design:** This study has adopted Ex-post Facto Research Design using Panel Data. Ex-post Facto Research Design was adopted because the data for the study were drawn from past economic events. The Panel Data was used because the study involves both Time-Series and Cross-Setional study. Again, a Cross-Sectional research enables data drawn from different sectors to be analysed and compared on sector by sector basis (Ryan, Scapens & Theobald, 2002 as cited in Chukwu, 2015) . The Time Series Data design nature is because the data for the study relates to different years of the operations of diverse economic sectors in Nigeria, (Aneke, 1998 as cited by Onyekwelu, 2015).

**3.3 Population of the Study:** The population of this study is the 250 companies listed on the Nigerian Stock Exchange (NSE) as at 31st December 2013. ( NSE Fact Book, 4th Quarter, 2013).

**3.4 Sampling and Sampling Technique:** The Stratified Sampling Technique was adopted in this study. This was complemented with the Simple Random Sampling Technique. The Stratification saw that firms were classified under their relevant economic sectors. Following this, Twenty One(21) companies, three(3) each of seven(7) economic sectors were used for the study.

The study considered these sectors very robust in view of the volume of their activities in the exchange, market share and firms' capitalization and therefore will provide a broad base for analysis that could serve the diverse interested parties(Efobi & Bwala, 2013; Nwude, 2012). Sectors studied represent 56% of the market capitalization of the listed equities and were the most traded (apart from the banking sector) of the firms listed in the exchange as at 31st December, 2013.

The sampling process had eliminated four sectors(Banking, insurance, minning and agriculture) out of the eleven sectors through which firms were listed. Following this, Fifty Six(56) in Four (4) industrial sectors were eliminated from this process. Firms in financial and mining sectors were eliminated from this study because their financial structures were considered as different and their valuation parameters are likely to be significantly different from other companies considered in this study. This assertion is also in consonance with previous studies such as (Pouraghajan, et.al., 2013; Banimahd, et al, 2012; Djamil, et al. 2013).

Again, their industry-specific accounting standards also make their accounting numbers different (Graham & King, 2000 as cited by Vafei, et.al., 2011). Again, the age of the firms were taken into consideration as firms studied were those that were listed and have consistently traded on the Nigerian Stock Exchnge for the ten-year period(2004-2013) under study. Firms for the study considered the availability of data as firms were considered only if they have filed annual reports and accounts for the ten year period.

However, the heterogeneity of the firms on the exchange led us to consider some qualifying parameters in choosing firms for the study. Firms were selected after the following screening:

(i)Equitable representation of the economic sectors, the seven sectors were put in a strata while stratified random sampling technique was used to select each of the three companies used for this study. Stratified random sampling technique was adopted as basis for sampling because it ensures representativeness and increases precision at a much reduced cost(Uzoagulu, 2011). Stratification also produces a lower standard error because the total variation for any particular variable in a population strata may be regarded as being composed of variation between strata and variation within strata(Osuala, 2001).

In addition, the choice of sampling technique is in consonance with previous studies of scholars such as (Vafei, et al 2014; Zelgalve & Bezklane, 2014; Djamil, et al, 2013, Henry, 2013, Asadi, 2012; Maditonis, et al.2011; Banimahd, et al., 2011; Salman, et al, 2012).

(ii) Firms were listed and had consistently traded on the Nigeria Stock Exchange on or before 1$^{st}$ January 2004 till 31$^{st}$ December, 2013 were selected for the study. This parameter ensured that only firms that had complete ten-year data needed for this study were selected.

(iii) Firms have not changed name since 2004.

**3.5 Method of Data Collection:** This study made use of secondary data sourced from the annual financial statements of the firms and the database of the Nigeria Stock Exchange(NSE, Factbook). These data were considered credible since they have been audited and filed with the Securities and Exchange Commission.

The choice of data was also in line with studies of scholars such as Pulic(1998) on measurement firms' IC, the Value Added Intellectual Model(VAIC)which were adopted in the studies conducted on IC and firms performance by previous researchers {Anuonye,2015; Banimahd, et.al.2012; Berzklane & Zelgalve,2014; Rahman,2012;Darabi, et. al.2012;Henry, 2013; }.

**3.6 Procedure for Data Analysis and Model Qualification:**

3.6.1 Tools for Data Analysis: The data collected were analyzed using basic statistical tool that will provide the descriptive analogies such as mean, median, standard deviation and so on. Multiple Linear Regression was also used to test the hypotheses. Data analyses were done with the aid of E-Views 8.0 Statistical Software.

**3.6.2 Model Specification**

Multiple Linear Regressions

Model specification indicates the model mathematical or econometric which a research adopted. According to Kousoyiannis(2003) as cited in Ike-Ekweremmadu(2014) notes that model

specification involves the determination of the dependent and explanatory variables included in the model, the theoretical expectations about the sign and the size of the parameters of the functions.

The study used Multiple Regression and Correlation Coefficient done with the aid of E-Views 8.0 Software, 2015 to analyse the data. The multiple regression is adopted because according to Mroverview (2012) in Ike-Ekweremmadu(2014), it is known to estimate how well the set of independent variable predicts the dependent variable, ascertain the relative contribution of each independent in predicting the dependent variable, determine the best subset of the predictor variable from the overall set and reveal the incremental validity of each predictor over every and is applied for robustness check.

To determine the effects of Intellectual Capital on corporate valuation, the researcher regressed the intellectual capital efficiency coefficients on selected corporate valuation indices (Price/Earnings Ratio(P/E), Market to Book Value(M/BV), Earnings per Share(EPS), Net Assets per Share(NAPS), Gross Revenue per Share(GRPS) and Share Price(SP). The Multiple Linear Regression statistical tool was used to analyse the data collected.

The Value Added Intellectual Coefficient model is adopted for this study as earlier stated. The choice of this model is in consonance with previous studies in IC (Salman, et. al, 2012; Uadiale & Uwuigbe, 2011; Berzklane & Zelgalve, 2014).

The following model was employed in testing the hypotheses 1-6:

$H_{01}$: Intellectual Capital has no significant effect on Price/Earnings(P/E)Ratio of firms in Nigeria.

$$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \mu = P/E_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$H_{02}$: Intellectual Capital does not significantly affect Market to Book Value Ratio (M/BV) of firms in Nigeria.

$$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \mu = M/BV_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

$H_{03}$: Intellectual Capital does not significantly affect Earnings per Share (EPS) of firms in Nigeria.

$$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3\, CEE_{it} + \mu = EPS_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

H$_{04}$**:** Intellectual Capital has no significant effect on Net Asset Value (NAPS) of firms in Nigeria.

$$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3\, CEE_{it} + \mu = NAPS_{it}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(4)$$

Intellectual Capital has no significant effect on Gross Revenue per Share (GRPS) of firms in Nigeria.

H$_{05}$**:**$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3\, CEE_{it} + \mu = GRPS_{it}\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(5)$

Intellectual Capital does not significantly affect Share Price (SP) of firms in Nigeria.

$$\beta_O + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3\, CEE_{it} + \mu = SP_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(6)$$

**Where:**

$P/ER_{it}$: Price Earnings Ratio defined as the market price of shares divided by the Earnings per Share for firm i in year t.

$M/BV_{it}$: Market to Book Value variable for firm i in year t.

$EPS_{it}$: Net Income after tax and preference dividend divided by the number of shares in issue for firm i in year t.

$NAPS_{it}$: Net assets per share/book value per share for firm i in year t.

$GRPS_{it}$: Turnover divided by firm i in year t.

$SP_{it}$**:** Share Price of firm i in year t.

$HCE_{it}$: Human Capital Efficiency of firm i in year t.

$SCE_{it}$: Structural Capital Efficiency of firm i in year t.

$CEE_{it}$: Capital Employed Efficiency of firm i in year t.

$\beta_O$:Constant Term (intercept)

$\beta_1$: coefficient of human capital

$\beta_2$: coefficient of structural capital

$\beta_3$: coefficient of capital employed

$\mu$: Error term.

The Value Added Intellectual Coefficient Model (VAIC) as developed and propounded by Pulic(1998) was adopted for this study. The study was used to measure the value added by Intellectual Capital possessed by the various companies being studied. It explains how new values have been created per invested monetary unit resources. 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 components (Pulic,1998).

**3.7 Justifications of Methods**: VAIC is a standardized, consistent and relatively easy to calculate basis of measurement of value added thereby enabling effective comparative analysis across companies and years (Firer & Stainbank, 2003).

Other reasons for the adoption of the Value Added Intellectual Coefficient model:

(i) The base measurement in this model is standard and constant which helps in comparing large samples and across different industries and thus supports this study which is cross sectional and of time series in nature;

(ii) All data in VAIC model are extracted from financial statements, thus they are objective. This collaborates this study which will make use of content analysis of annual reports of firms under study.

(iii) The model has been used by numerous established researchers to measure firms' Intellectual capital on corporate values(Anuonye, 2015; Kamath, 2015; Berzklane & Zelgalve, 2014; Ferchichi and Paturel, 2013; Henry, 2013; Kwe, et al. 2013; Banimahd, et.al.2012; Pucar,2012; Rahman, 2012; Ekwe, 2012; Darabi, et al., 2012; Firer & Stainbank, 2003).

Schneider(1999) in Vafaei, Taylor & Ahmed(2011), further justified the adoption of Pulic's VAIC by most scholars with the following reasons:

(a.) VAIC model places an emphasis on the value of employees, a key component of intellectual capital;

(b) The model enables the collection of evidence of Intellectual Capital leverage to key success processes.

(c) VAIC methodology used in the calculation of VAIC is relatively straight forward thus enabling greater understanding and the model could be relatively easy to calculate using information already verified and accounted for by a firm and reported in financial statements thus minimizing any additional costs to the preparer and other stakeholders.

## 3.8 Description of  Research Variables

The research variables were structured into dependent and independent variables for the purpose of analysis. The dependent variables are proxies measuring corporate valuation (Price/Earnings Ratio(P/E), Market to Book Value per Share(MBPS), Earnings per Share(EPS), Net Asset per Share(NAPS), Gross Revenue per Share (GRPS) and Share Price(SP).

**3.8.1 Dependent Variables:** The dependent variables are proxies measuring corporate valuation. These variables are Price/Earnings Ratio(P/E Ratio), Market to Book Value per Share(M/BV), Earnings per Share(EPS), Net Asset per Share(NAPS), Gross Revenue per Share (GRPS) and Share Price(SP).

**a. Price Earnings Ratio (P/E Ratio):** Price Earnings Ratio is defined as the ratio of market price of share to the earnings per share. It explains the extent to which a company's earnings per share are covered by its share price. It further shows what an investor pays for every unit of naira earnings attributable to a share.

It is explained by:

P/E Ratio: $\dfrac{SP_{it}}{EPS_{it}}$ ..................................................................................................................**(1)**

**Where:**

$SP_{it}$ , represents share price per ordinary share of the firm i in year t

$EPS_{it}$, represents the earnings per ordinary share of the firm iin year t

**(b.) Market to Book Value Ratio**: This is defined as the ratio of Market price of share to the book value.

M/BV Ratio = $\underline{MV}$

$$BV \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

**Where:**

MV= No of shares x Stock price at the year end.

BV= Book value per share

**(c)Earnings per Share (EPS):** Earnings per share will be measured of Net Income (Profits after Tax) after Minority interests generated divided by the number of ordinary shares in issue. This will be used to measure the extent to which the assets have been used to generate earnings in t year.

EPS=$\underline{\text{Net Profit after Tax- Preference Dividend- Minority Interest}}$

$$\text{No of Ordinary Shares in Issue} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

**(d) Net Asset to Book Value(NAPS):** Net Asset to Book Value which is also known as book value is calculated as the value of the firms non-current assets and current asset less the firms' current and non-current liabilities divided by the number of ordinary shares in issue.

This is represented by:

$\underline{\text{Net Assets}}$

$$\text{No of shares in issue} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

**(e)Gross Revenue per Share(GRPS):** this defines the firms Turnover/sales that is attributable to one unit if share in i firm in t year.

GRPS= $\underline{\text{Sales}}$

$$\text{No of ordinary shares in issue} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

**(f)Share Price(SP):** Share price is the value of market price or worth of a unit of share in the company. It is the worth of trading a unit of a company's share as listed in the Nigeria Stock Exchange. This study adopted the end of year share price as carried by the NSE. This variable was

used to ascertain the relationship between the market price of the firm that is accounted for by variations in Intellectual Capital.

Share Price=Total Market Capitalization

No of ordinary shares in issue…………………………………………….**(6)**

Model 1, 2, 3 through 6 will be used to test hypotheses 1-6 accordingly.

**3.8.2 Independent Variables:** The independent variable of this study is the value of Intellectual Capital as depicted by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency (CEE). These sum of this three variables is the Value Added Intellectual Coefficient(VAIC). Thus:

**(i)Value Added Intellectual Coefficient(VAIC):** VAIC is the sum of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). Value Added Intellectual Coefficient(VAIC) is a model propounded by Pulic(1998) and is used for the measurement of value added(value creation) by human capital, structural capital, physical and financial capital.

The measurement of value added is graduated into various steps namely:

**Step 1:**

The Value added is measured using the following equation:

VA = WS+I+DP+DIV+T+R...............................................................................................(1)

Where:

VA : Value Added; W: Wages and Salaries ; I : Interest Expenses; DP: Depreciation Expenses;

DIV: Dividends; T: Corporate Taxes and R: Retained profit for the year.

**Step 2 :**

Value Added Intellectual Coefficient(VAIC) is calculated using the formular:

VAIC = HCE + SCE +CEE..............................................................................................(2)

**Where:**

HCE= Human Capital Efficiency

SCE = Structural Capital Efficiency

CEE= Capital Employed Efficiency

**(a) Human Capital  Efficiency (HCE)**: This defines the ratio of Total Value Added to Total Salaries and Wages. Human Capital(HC) is interpreted as employee expenses and Human Capital efficiency (HCE) is calculated by dividing VA (added value) with HC (Human Capital). This ratio shows the ability of human capital in creating firm's value added. Human Capital Efficiency (HCE) indicates how much value added was created by one financial unit which was invested in the employees. Thus:

$$HCE_{it} = VA_{it}/HC_{it} \dots\dots\dots\dots\dots\dots (1)$$

**Where:**

$HCE_{it}$ =  Human Capital Efficiency of firm i in year t;

$HC_{it}$ =   Human Capital  of firm i in  year t;

$VA$ =    Value Added of  firm i year t;

**(b) Structural Capital Efficiency (SCE):** Structural Capital (SC) is the difference between produced Added Value (VA) and Human Capital (HC)According to the model, Total Value of Wages and Salaries is deducted from Value Added. The result was thus divided by Total Value Added. This ratio indicates how much of value added was generated by structural capital. Pulic (1998) further submits that  there is a proportionate inverse relationship between Human Capital and Structural Capital in the value creation process. In line with this, he notes that the less human capital participates in value creation chain, the more the structural capital involved.

Structural Capital Efficiency (SCE) is calculated by dividing SC(Structural Capital ) with VA(Value Added).

**Thus:**

$$SCE_{it} = SC_{it}/VA_{it} \dots\dots\dots\dots\dots\dots (2)$$

**Where:**

$SCE_{it}$ = Structural Capital Efficiency of firm i in year t;

$SC_{it}$ = Structural Capital of firm i in year t;

$VA_{it}$ = Value Added of firm i year t;

**(c) Capital Employed Efficiency (CEE):** The ratio was used to calculate the Total Value Added to Book Value of firm's Net Assets. This ratio will show how much of firm's value added will be created by physical and financial assets. The ratio is interpreted as financial capital and Capital Employed Efficiency (CEE) and is calculated by dividing VA(Value Added) by CEE(Capital Employed). Berzklane & Zelgalve(2014) submit that Capital Employed Efficiency(CEE) shows how much new value added has been created by one unit of investment in the capital employed.

**Thus:**

$CEE_{it}$ =VA/CE............................................................................................................(3)

**Where:**

$CEE_{it}$ = Capital Employed Efficiency of firm i in year t;

$VA_{it}$ = Value Added of firm i in year t;

$CE_{it}$ = Capital Employed of firm i in year t;

The above proxies for human capital, structural capital and capital employed are in line with previous researches (Henry, 2013; Anuonye, 2015; Rahman, 2012) among others.

**Decision Rule:** The decision was based on the outcome of VAIC( Value Added Intellectual Coefficient). If the coefficient is high, it indicates the management has used the firm's resources (HC,SC and CE) efficiently and if it is low it means that management has been inefficient in the use of resources. Inference was based on the significant level at 5%. As such null hypotheses was rejected if the computed value of the statistics exceeds the crirtical or table value. Otherwise do not reject the null hypothesis.(Uzoagulu, 2011).

**3.8.3 Analytical Techniques:**

The E-View Software was used to run the analysis on this study. The following basis were also employed in explaining the results:

(i) **Probabilty Value (P-Value):** The P-Value was used to explain the level of significance between the dependent variables and the explanatory variables. The alpha value was interpreted at 5% level of significance. As such, when the P-Value is less than 0.05, it means that the relationship is relevance at 5% level of significance. Following this, the Null hypothesis was rejected and alternate hypothesis is accepted. However, if the P-Value is more than 0.05 at 5% level of significance, then the null hypothesis is accepted while the alternate hypothesis is rejected.

(ii) $R^2$ **Adjusted:** The coefficient of determination is the fraction of the variance of the dependent variable explained by the independent variables. This is the coefficient of determination. It was applied in explaining the degree/percentage of the variations in the dependent variable, which is explained/caused by the changes in the explanatory variables. A high percentage indicates that the variation in the dependent variable attributed to independent variable is high while an inverse relationship exists when it is low.

(iii) **F–Statistics**: This defines the suitability of the analysis run. It tests the hypothesis that all the slope coefficients (excluding the constant or intercept) in a regression are zero.

# CHAPTER FOUR

## DATA PRESENTATION AND ANALYSIS

**4.1 Introduction:** This chapter presents data as collected from the firms' financial statements and relevant documents of the Nigerian Stock Exchange (NSE) and results of the analyses. Six (6) hypotheses as earlier stated in Chapter One(1) were tested on each of the variables on the seven economic sectors studied. The hypotheses were tested using Multiple Regression and Correlation Coefficient Analysis with the aid of E-Views 8.0 Statistical Software. Section 4.3 presents descriptive statistics of corporate valuation indices used in the study. Section 4.4 presents the results of the univariate test on variables used as proxy for corporate valuation. The result of the multiple regression will be presented in Section 4.5 while the Section 4.6 discusses the major findings of the study.

**4.2 Historical Background Information of Companies Studied:** See Appendix 1 for the background information of firms studied.

**4.3 Descriptive Statistics**

Table 4.1 presents the descriptive statistics for the operational variables of this study. The descriptive data are based on data collated from the Twenty-One(21) companies studied as shown in Appendices 2-8. Results indicate that the mean values for HCE, SCE, CEE, P/ER, M/BV, NAPS, EPS, GRPS and SP for the period 1.678429, 18.47181, 40.69671, 3.175056, 0.501511 and 0.754423 17.59246, 1.860329 and 6.035857 are respectively. When the series are arranged either in ascending or descending order, the middle value (or average of the two middle values) of the series is the median. The median in this case HCE, SCE, CEE, P/ER, M/BV, NAPS, EPS, GRPS and SP 3.035050, 0.658400, 0.67340013.32800, 3.256000, 3.985000, 0.425000, 10.39000 and 6.545000 respectively. The maximum values for, HCE, SCE,CEE P/ER, M/BV, NAPS, EPS, GRPS and SP

6.834900, 0.854100, 4.991300, 163.6600, 49.10000, 30.57000, 12.16000, 83.84000 and 275.0000 are respectively.

A measure of the dispersion or spread in series was also done through the computation of standard deviation. SP and P/ER are relatively more volatile than NAPS. The dispersion with respect to EPS is the least compared to other variables.

**Table 4.1. Descriptive Statistics of Operational Variables of Selected Firms in Nigeria**

|  | P/E | M/BV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 17.59246 | 1.860329 | 6.035857 | 1.678429 | 18.47181 | 40.69671 | 3.175056 | 0.501511 | 0.754 |
| Median | 13.32800 | 3.256000 | 3.985000 | 0.425000 | 10.39000 | 6.545000 | 3.035050 | 0.658400 | 0.673 |
| Maximum | 163.6600 | 49.10000 | 30.57000 | 12.16000 | 83.84000 | 275.0000 | 6.854900 | 0.854100 | 4.991 |
| Minimum | -23.82000 | -160.5000 | -11.16000 | -4.860000 | 0.882000 | 0.670000 | -0.388000 | -1.574000 | -3.611 |
| Std. Dev. | 29.65928 | 21.04754 | 8.234781 | 3.396084 | 20.24338 | 64.24089 | 1.641521 | 0.480879 | 1.125 |
| Observations | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 |

Source: Researchers computations, 2015

**4.4 Univariate Analysis:** Appendix 57 presents the correlations between intellectual capital and corporate valuation indices. Components (HCE, SCE and CEE) are positively correlated with the dependent variable P/E Ratio in the healthcare sector.

The strength of the linear relationship between the variables in the healthcare sector is divergent. There is a positive but weak positive correlation between P/E Ratio/HCE 34%; P/E Ratio/SCE(29.08%) and P/E Ratio/CEE(22%). M/BV Ratio/HCE also had a weak positive association at 24%; M/BV Ratio/SCE (3%) has a very weak positive association. M/BV Ratio/CEE (-33%) have a weak negative association; NAPS/ HCE 0.526571(53%); has a strong positive association; NASP/SCE 0.497852(49.78%) a moderate positive relationship. NASP/CEE -0.274516(27%) a weak negative relationship; EPS/HCE 0.544009(54%);EPS/SCE 0.540317(54%); EPS/CEE 0.336411.(34%); EPS has strong positive relationship with HC and SC at (54%) and (54%) respectively, but has a weak positive association with CE; GRPS/HCE 0.375012(37.50%); GRPS/SCE 0.300270(30%) and GRPS/CEE 0.08250. GRPS has weak positive relationship with HCE at (37.50%) and SCE at (30%) respectively but has very strong positive relationship with CE at 82.50%. SP/HCE 0.453443(45.34%); SP/SCE 0.26710(26.71); SP/CEE -0.023609(2.36%). SP

has a weak positive correlation with HC at (45.34%); have a very weak positive relationship with SC (26.71%); and a very weak negative relationship (2.36%).

Appendix 58 shows that P/E/HCE in the ICT sector has a very weak positive correlation; P/E Ratio/SCE shows a very weak positive. Again, P/E Ratio/CEE; indicates a very weak negative correlation. M/BV Ratio/HCE shows a very weak negative relationship. This is in consonance with Anuonye(2015) and Firer and Stainbank(2003). M/BV Ratio/CEE indicates a very weak positive correlation. EPS/HCE shows a weak positive relationship; EPS/SCE indicates a very weak positive correlation; EPS/CEE show very weak positive correlation. GRPS/HCE indicates a weak positive correlation; GRPS/SCE indicates a weak positive correlation and GRPS/CEE shows a weak positive correlation. SP/HCE indicates weak positive correlation; SP/CEE indicates a very weak correlation. SP/SCE indicates a very weak negative correlation.

NAPS/HCE shows a very weak positive relationship at; NAPS/SCE, shows very weak positive relationship and NAPS/CEE very weak positive relationship.

The linear relationship between the variables are as follows :P/E Ratio/HCE is 0.065298 indicates a very weak positive correlation; P/E Ratio/SCE 0.146000 shows a very weak positive; P/E Ratio/CEE -0.014967; indicates a very weak negative correlation at 1.50. M/BV Ratio/HCE -0.071255 shows a very weak negative relationship at 7.13%, M/BV Ratio/SCE 0.070998 indicates a very weak positive correlation at 7.10 . M/BV Ratio/CEE 0.193823 indicates a very weak positive correlation. EPS/HCE 0.274188 shows a weak positive relationship at 27.42%; EPS/SCE 0.049051 indicates a very weak positive correlation; EPS/CEE 0.189755 show very weak positive correlation.

GRPS/HCE 0.350701 indicates a weak positive correlation at 35.07%; GRPS/SCE 0.125455 indicates a weak positive correlation, 12.54% and GRPS/CEE 0.054496 shows a weak positive correlation at 5.45%. SP/HCE 0.233404 indicates weak positive correlation at 23.34%; SP/SCE -0.149307 indicates a very weak negative correlation; SP/CEE -0.007802 indicates a very weak

correlation at 0.8%; NAPS/HCE 0.394690 shows a weak positive relationship at; NAPS/SCE 0.099082, shows very weak positive relationship at 9.91% and NAPS/CEE 0.074710 very weak positive relationship at 7.48%.

Appendix 59 shows the correlation result on the oil and gas sector of Nigeria. The result postulates the following: P/E Ratio/HCE has very weak positive negative correlation at 15.99%. P/E Ratio/CEE have weak positive association at 23.32%. M/BV Ratio/HCE have very weak negative association at 14.82%. M/BV Ratio/SCE have weak positive correlation at 5.56%. M/BV Ratio/CEE 0.639798 have high positive association. EPS/HCE -0.140444 have very weak negative correlation at (-14.04%); EPS/SCE-0.282224 have weak association at (28.22%). EPS/CEE 0.367325 is weakly and positively correlated.

GRPS/HCE 0.455588 indicates an average positive relationship at 45.56% ; GRPS/SCE 0.330462 shows a low positive association. This study indicates that GRPS has positive and average positive correlation with HCE while the association between SCE and GRPS shows a low positive correlation. This study's result supports earlier studies of Rahman and Ahmed(2012), Asadi, (2012) who submitted that there is a positive significant correlation between VAIC and GRPS.GRPS/CEE -0.549217 shows a fairly high negative relationship at 54.92%. SP/HCE (0.317466) shows a low negative association, SP/SCE(-0.186512) have very weak negative correlation at 18.65%. SP/CEE 0.769126 shows a high positive correlation at 76.91%.

In Appendix 60 (Food & Beverage sector), P/E Ratio/HCE indicates a fairly high positive association at 57.83%; P/E Ratio/SCE is a high positive relationship at 57.06% and a very weak positive association with P/E Ratio/CEE at 12.07%. M/BV Ratio/HCE 0.583878 indicate a fairly high positive association at 58.39%;M/BV Ratio/SCE 0.287005 indicates a weak positive correlation and M/BV Ratio/CEE indicates a high positive 60.66%.

EPS/HCE 0.752190 show a high positive association at 75.22%; EPS/SCE 0.395230 shows a weak positive relationship at 39.52% while EPS/CEE 0.412210 moderate positive relationship.

GRPS/HCE 0.586620 indicates a moderate high positive association at (58.66%); GRPS/SCE 0.329836 shows a weak association at (32.98%)and GRPS/CEE 0.458387 indicates a fair positive relationship at (45.84%).

SP/HCE 0.601578 shows fairly high association at (60.15%); SP/SCE indicates 0.252729; weak positive association at 25.27% and 0.275866 for SP/CEE respectively at 27.59%. NAPS/HCE of 0.193320 a very weak positive association at (19.33%). NAPS/SCE -0.083966 indicates a very weak negative relationship at (8.4%) and NAPS/CEE -0.037835 show a very weak negative association at (3.78%).

In Appendix 61, results show that HCE and SCE have negative correlation with P/E Ratio in Personal/Household Consumables Sector. The result also shows that there is a weak positive correlation exists between P/E Ratio and CEE. M/BV Ratio/HCE, M/BV Ratio/SCE. The result postulates that a negative correlation exists between HCE and SCE with M/BV Ratio.

EPS/HCE has weak positive correlation at 24.66% and EPS/SCE at 36.88(%). EPS/CEE,but has a weak negative association with CE at 19.04%. HCE/NAPS have a very weak negative association at (26.99%); SCE/NAPS have very weak negative association at (16.09%), CEE/NAPS have a strong negative association at (50.49%).

HCE/GRPS have very weak positive correlation at 10.84%; GRPS/SCE at 14.51% have very weak positive relationship. CEE /GRPS have strong negative relationship at 56.32%. This report is in line with Maditonis(2011). HCE/ SP have very weak negative association at (17.51%); SCE/SP have very weak negative relationship at 11.51%.

Appendix 62 indicates that all the independent variables (HCE, SCE and CEE) are positively correlated with the dependent variable P/E Ratio in the brewery sector. Their studies carried out an investigation into the effect of IC on Market Values and Financial performance and agreed that IC components are positively and significantly correlated with market valuation and financial performance variables.

The degree of the linear relationship between the variables is different. The correlation between the variables is as follows: P/E Ratio/HCE is (0.096372) which is 9.63%; P/E Ratio/SCE 0. 186386; P/E Ratio/CEE 0.363062. There is a positive but very weak positive correlation between P/E Ratio and HCE and SCE 9.63% and 18.64%. but has weak positive correlation with CE at 36.31%.M/BV Ratio/HCE 0.147168, M/BV Ratio/SCE 0.019584, M/BV Ratio/CEE 0.287669; M/BV Ratio/HCE have a very weak positive association at 14.72%; with SCE at 1.9% while it has a weak positive association with CE at 28.77%. EPS/HCE 0.784355;EPS/SCE 0.478148; EPS/CEE 0.263162. EPS has very strong positive relationship with HCE at 82.50%; has moderate positive relationship with SC at (47.81%) and a weak positive association with CEE 26.31%. GRPS/HCE 0.715002; GRPS/SCE 0.395434 and GRPS/CEE 0.189781. GRPS has strong positive relationship with HCE at (71.50%) . It has a weak positive correlation with SCE at (39.54%) and a very weak positive relationship with CE at 18.98%. SP/HCE 0.670832; SP/SCE 0.407063; SP/CEE 0.185344. SP has a strong positive correlation with HC at 67.08 %; has a moderate pos.itive relationship with SC at 40.71%; and a very weak positive relationship with CE (18.53%). NAPS/HCE 0.745188; NAPS/SCE 0.415941, NAPS/CEE 0.146422. NAPS has a strong positive association with HC at 74.52%; has a moderate positive relationship with SC and a weak positive relationship with CE at 14.64%.

Appendix 64 shows that HCE and SCE are negatively correlated with P/E Ratio in the conglomerates. The study further reveals that there is a positive correlation between CEE and P/E Ratio. VAIC components (HCE and SCE) show a negative correlation with M/BV Ratio. HCE/EPS and SCE/EPS are positively correlated. CEE/EPS are negatively correlated. All the explanatory variables are negatively correlated with Net Assets per Share (NAPS).

HCE/GRPS and SCE/GRPS are positively correlated. Result further shows that CEE/GRPS are negatively correlated. Results further show that HCE/SCE and SP are negatively correlated. Results also revealed that CEE is negatively correlated.

**4.5 Pooled Data Correlation Matrix**

Appendix 70 presents  that all the independent variables (HCE, SCE and CE) are positively correlated with the dependent variable P/E Ratio in the brewery sector. The degree  of the linear relationship between the variables is different. The correlation between the variables is as follows: P/E Ratio/HCE is 0.18828 which is 18.82%; P/E Ratio/SCE 0.244592(24%); P/E Ratio/CEE 0.247821. There is a positive but weak positive correlation between P/E Ratio and HCE and SCE 18.8% and 24.5%. but has weak positive correlation with CEE at 24.78%. M/BV Ratio/HCE 0.147168, M/BV Ratio/SCE 0.019584, M/BV Ratio/CEE 0.287669; M/BV Ratio/HCE have a very weak positive association at  11.96%; with SCE at 1.6% while it has a  weak positive association with CEE at 7.4%. EPS/HCE 0.794929;EPS/SCE 0.516433; EPS/CEE 0.336920. EPS has strong positive relationship with HCE at 79%; has moderate positive  relationship with  SCE at (51.6%) and a fairly weak positive association with CEE 33.7%. GRPS/HCE 0.729141; GRPS/SCE 0.362069 and GRPS/CEE 0.191930. GRPS has strong positive relationship with HCE at (72.91%) . It has a weak positive correlation with SCE at (36.21%) and  a very weak  positive relationship with CE at 19%. SP/HCE 0.724823; SP/SCE 0.358621; SP/CEE 0.191930. SP has a strong positive correlation with HCE at 72.48%; has a weak positive relationship with SCE  at 35.86%; and a very weak  positive  relationship  with  CEE  19.19%.  NAPS/HCE 0.742299;  NAPS/SCE 0.458136, NAPS/CEE 0.247670. NAPS has a strong positive association with HCE at 74.23%;  has  a moderate positive relationship with SCE at 46%   and  a weak positive  relationship with CE at 24.77%.

**4.6 Presentation of Empirical Results:** This section presents the empirical results as generated from the hypotheses tested. Hypotheses 1 through 6 earlier stated in chapter one were tested using Models 1- 6 as stated in Chapter 3 using the data in Appendices 2-8.  Thus:

**4.6.1 Test of  Hypotheses One :**

**Research Question 1:** To what extent does Intellectual Capital affect Price-Earnings Ratio of firms in Nigeria?

**Hypothesis One:**

**Ho**:  Intellectual Capital has no significant effect on Price-Earnings(P/E)  Ratio of firms in Nigeria.

**Decision Rule: Decision Rule:**

      1**.** Reject  Ho if the P-Value cal $< 0.05$ at 5% level of significance.

      2**.** Otherwise accept the null hypothesis (Ho).

Hypotheses One was tested with  Model 1 as earlier stated in Chapter 3, thus:

$$P/E_{it} = \beta_O + \beta_1\,HCE_{it} + \beta_2\,SCE_{it} + \beta_3\,CEE_{it} + \mu \ldots\ldots\ldots(1)$$

*Relevant data from Appendices 2 through 8 were used in testing  this hypothesis.

**Table 4.2 Regression Results Showing the Effect of ICE(HCE, SCE and CEE) on Price-Earnings Ratio(P/E) of Firms in Nigeria.**

| DV: P/E | Coefficient | t-statistics | P-value | Adj. R$^2$ |
|---|---|---|---|---|
| **Panel A: Healthcare** | | | | |
| (Constant) | -5.980713 | -0.448781 | 0.6563 | |
| HCE | 8.737434 | 1.230216 | 0.2266 | |
| SCE | -1.835574 | -0.126799 | 0.8998 | |
| CEE | 3.124486 | 1.022689 | 0.3133 | |
| **Panel B: ICT** | | | | |
| (Constant) HCE | 1.347307 | 1.305046 | 0.2038 | |
| SCE | 0.025814 | 0.183470 | 0.8559 | |
| CEE | 0.269611 | 0.689789 | 0.4967 | |
| | -0.074568 | -0.152567 | 0.8800 | |
| **Panel C: Oil & Gas** | | | | |
| (Constant) | -40.85601 | -1.071060 | 0.2940 | |
| HCE | -5.182864 | -1.649335 | 0.1111 | |
| SCE | 105.3942 | 1.554603 | 0.1319 | |
| CEE | 3.610984 | 0.793290 | 0.4348 | |
| **Panel D: F&B** | | | | |
| (Constant) | -35.26650 | -3.088979 | 0.0039 | |
| HCE | 16.56334 | 2.398238 | 0.0218* | |
| SCE | 30.32086 | 1.931862 | 0.0613 | |
| CEE | -4.511992 | -0.959723 | 0.3436 | |
| **Panel E: P/HC** | | | | |
| (Constant) | 41.01111 | 2.341218 | 0.0272 | |
| HCE | -12.73977 | -1.614537 | 0.1185 | |
| SCE | 10.80871 | 0.208929 | 0.8361 | |
| CEE | 12.77116 | 2.471503 | 0.0203* | |
| **Panel F: Brewery** | | | | |
| (Constant) | 4.748889 | 0.274168 | 0.7861 | |
| HCE | -3.493126 | -0.662843 | 0.5133 | |
| SCE | 11.22463 | 0.530922 | 0.6000 | |
| CEE | 21.21259 | 1.820034 | 0.0803 | |
| **Panel G:Conglomerates** | | | | |
| (Constant) | 30.67160 | 1.094883 | 0.2836 | |
| HCE | -15.75026 | -1.276297 | 0.2131 | |
| SCE | 23.59057 | 0.330022 | 0.7440 | |
| CEE | 76.09114 | 1.169218 | 0.2529 | |

Source: Researcher's Computations using E-Views 8.0 Software, 2015; *Significant at 5% level

**Where:** DV= Dependent Variable; P/E= Price–Earnings Ratio; HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency. P/HC= Personal/Household Consumables.

**Interpretation of Regression Results:**

Table 4.2 presents the regression results on effect of Intellectual Capital(Human Capital, Structural Capital and Capital Employed) on Price Earnings Ratio of firms studied. Analysis in the healthcare sector as shown in Panel A indicates that a unit/one naira change in Intellectual Capital (explanatory variables) as explained by Human Capital (HC), Structural Capital (SC) and Capital Employed (CE) will yield an increase of 8.737434, a decrease of 1.835574 and an increase of 3.124486 respectively in the P/E Ratio of firms in the healthcare sector. By substuting these values in Model 1, the relationship is represented by the following equation:

$P/E_{it} = -5.980713 + 8.737434 - 1.835574 + 3.124486$

In line with the above equation, the effect Intellectual Capital on the P/E Ratio as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed (CEE) is positive with HCE, negative with SCE and positive with CEE.

Table 4.2 further reveals that the comprehensive effect of IC on P/E Ratio of the firms is positive and insignificant at 0.05 level with a p-value of $x_{1=}0.2266$ for HCE is insignificant. It is also insignificant for SCE with P-Value of $x_2=0.8998$ and positive and insignificant with CEE with a P-Value of $x_3=0.3133$.

**Decision:** Accept the null hypotheses and reject the alternate hypothesis which states that Intellectual Capital has a significant effect on P/E Ratio in the healthcare sector.

The above revelation suggests that any increase of HCE in the sector will lead to an increase in the P/E Ratio, increase in SCE will cause a decrease in P/E Ratio while an increase in the CEE will lead to an increase in the P/E Ratio of firms in the Nigerian healthcare sector .

**Table 4.2 (Panel B)** shows the regression result which tested the effect that IC has on P/E Ratio in ICT sector. Result shows that a unit/one naira change in the explanatory variables, IC will lead to

an increase of 0.025814, 0.269611 and decrease of 0.074568 for SCE and CEE respectively in the sector. Thus, by substituting the regression values in Model 1, thus the relationship is as follows:

$P/ER_{it}$ = 1.347307+0.025814+0.269611-0.074568.

Table 4.2(Panel B) also reveals the cumulative effect of IC on the P/E Ration in the ICT of sector. The result shows that IC has an insignificant effect in the the industry at 0.05 level for HCE and SCE with a p-value of $x_1$=0.8559(HCE), $x_2$= 0.4967(SCE) and $x_3$= 0.8800(CEE) respectively.

**Decision:** Accept the null hypotheses and reject the alternate hypothesis which states that Intellectual Capital has a significant effect on P/E Ratio in the ICT industry.

The findings therefore suggests that is that any increase in IC(HCE and SCE)will lead to an increase in the P/E Ratio of the firms in the ICT industry while any increase in CE will lead to decrease in the sector's P/E Ratio.

Table 4.2 (Panel C) shows the Regression Results of Hypothesis 1 in the Oil and Gas Sector. Analysis indicates that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to a decrease of 5.182864 an increase of 105.3942 and increase of 3.610984 respectively in P/E ratio in the Oil and Gas sector. By substituting the regression values in Model 1, the relationship is represented as:

$P/E_{it}$ = -40.85601 -5.182864+105.3942 +3.610984.

Table 4.2(Panel C) further reveals the cumulative effect of IC on the Oil and Gas of sector. The result shows that the association between HCE and P/E Ratio in the industry is positive and insignificant at 0.05 level with a p-value of $x_1$=0.1528(HCE); SCE and CEE have a negative and insignificant relationship with P/E Ratio with P- Value of $x_2$= 0.7964 and $x_3$= 0.9461 respectively.

**Decision:** Accept the null hypotheses and reject the alternate hypothesis which states that Intellectual Capital has a significant effect on P/E Ratio in Oil and Gas of sector.

The results suggest is that any increase in HC will lead to a positive and insignificant increase in the P/E Ratio of the firms in the Oil and Gas industry while increases in SCE and CEE will trigger an insignificant decrease in dependent variable(P/E Ratio) .

Table 4.2(Panel D) shows that a unit/one naira change in the Intellectual Capital {HC,SC and C E}respectively will lead to an increase of 16.56334, an increase of 30.32086 and decrease of 4.511992 respectively in Food and Beverages sector. This relationship is represented thus:

$P/E_{it}$ = -35.266650+16.56334+30.32086-30.32086.

The result further shows that the association between HCE in the industry is positive and significant at 0.05 level of significance with a P-Value of $x_1$= 0.0218. Structural Capital Efficiency had a positive and insignificantly related to P/E Ratio with P-Value of $x_2$=0.0613. However, CEE(0.3436) had a negative and insignificant effect on P/E Ratio in Food and Beverages sector in Nigeria.

**Decision:** We reject the null hypothesis for IC(HCE) and accept the alternate which states that IC(HCE) has a significant effect on P/E Ratio in Food and Beverages sector in Nigeria. However, based on empirical results, we accept the null hypothesis for SCE and CEE and reject the alternate hypothesis that IC(SCE and CEE) have a no significant effect on P/E Ratio in Food and Beverages sector in Nigeria.

This above result indicates that any increase in HCE will lead to positive and significant increase in the P/E ratio of the firms in the Food and Beverage sector. An increase in SCE in the industry will lead to a positive and an insignificant increase in P/E ratio. An increase in CEE will cause insignificant decrease in the P/E ratio in that sector.

Table 4.2(Panel E) shows that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to a decrease of 12.73977, an increase of 10.80871 and an increase of

12.77116 respectively in P/E Ratio in Personal/Household Consumable Sector. By substituting the regression results in Model 1, the relationship is thus represented:

$P/E_{it} = 41.01111 - 12.73977 + 10.80871 + 12.77116$

Results further shows that HCE had a negative and insignificant effect on P/E Ratio the industry is at 0.05 level of significance with a p-value of $x_2 = 0.1185$(HCE); SCE had a positive and insignificant relationship with P/E Ratio with P- Value of $x_{2=}0.8361$. CEE significantly related with P/E Ratio with P-Value of 0.0203 at 5% level of significance.

**Decision:** We accept the null hypothesis and reject the alternate hypothesis for HCE and SCE which that IC(HCE and SCE) has a significant effect on P/E Ratio in the P/HC sector. However, the null hypothesis is rejected and alternate hypothesis is accepted for CEE which that CEE has a significant effect on P/E ratio in the sector.

The findings indicate that any increase in HCE will lead to an insignificant decrease in the P/E Ratio of the firms in the Personal/Household Consumable sector in Nigeria. An increase in SCE will lead to an insignificant increase in P/E Ratio. However, any increase in CEE will cause a significant increase in P/E Ratio in that sector.

**Table 4.2(Panel F)** shows that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)} respectively will lead to a decrease of 3.493126, increase of 11.22463 and increase of 21.21259 respectively in P/E Ratio in the brewery sector. By substituting the regression values into Model 1, we have

$P/E_{it} = 4.748889 - 3.493126 + 11.22463 + 21.21259$

The cumulative effect of IC on the brewery sector shows that the effect of HCE on P/E Ratio in the industry is negative and insignificant at 0.05 level with a P-Value of 0.5133; positive and insignificant for SCE and CEE with P-Value of 0.6000 and 0.0803 respectively.

**Decision:** We accept the null hypothesis and rejected the alternate hypothesis for all the explanatory variables that states that IC has a significant effect on P/E Ratio in that sector.

**Table 4.2 (PanelG):** The table above indicates the result of the regression between IC(HCE, SCE and CEE). Result shows that a unit/one naira change in the explanatory variables IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively  will lead to a decrease of 15.75026, increase of 23.59057 and increase of 76.09114 respectively in P/E Ratio in the conglomerates sector of  Nigerian Economy.  When these values are substituted in Model 1, we have :

$P/E_{it} = 30.67160 - 15.75026 + 23.59057 + 76.09114$

Table 4.2 above also shows  the cumulative effect of IC on the conglomerates sector. Result shows that the relationship between HCE and P/E Ratio in the industry is negative and not significant at 0.05 level with a p-value(0.2131).  There relationship  between SCE and CEE with P/E Ratio is positive and insignificant with P-Value of  0.7440 and 0.2529 respectively.

**Decision:** We accept the null hypothesis and reject the alternate hypothesis that IC has a significant effect on P/E Ratio on all the explanatory variables.

### 4.6.2 Test of Hypotheses Two

**Research Question:** How does Intellectual Capital affect Market/Book Value Ratio of firms in Nigeria?

**Hypothesis Two:**

Ho:  Intellectual Capital does not significantly affect M/BV Ratio of firms in Nigeria.

The hypothesis was tested using the Model 2 as earlier stated in Chapter 3:

$M/BV_{it} = \beta_O + \beta_1(HCE_{it}) + \beta_2(SCE_{it}) + \beta_3(CEE_{it}) + \mu$**................................................................(2)**

\*Data on  Appendix 2 through 8  were used in testing the above hypothesis.

**Decision Rule:**

1**.** Reject  Ho if the P-Value cal < 0.05 at 5% level of significance.

2**.** Otherwise accept the null hypothesis (Ho).

**Table 4.3: Regression Results Showing the Effect of Intellectual Capital on Market/Book Value Ratio of Firms in Nigeria.**

| DV: M/BV | Coefficient | t-statistics | P-Value |
|---|---|---|---|
| **Panel A: Healthcare** | | | |
| (Constant) | -1.479571 | -2.309512 | 0.3056 |
| HCE | 1.859244 | 2.450484 | 0.0193* |
| SCE | -2.224842 | -1.438666 | 0.1589 |
| CEE | -0.753767 | -2.309512 | 0.0268* |
| | | | |
| **Panel B: ICT** | | | |
| (Constant) | 5.101534 | 1.598504 | 0.1220 |
| HCE | -0.199350 | -0.458681 | 0.6503 |
| SCE | 0.554121 | 0.457631 | 0.6510 |
| CEE | 0.408114 | 1.169218 | 0.2529 |
| | | | |
| **Panel C: Oil & Gas** | | | |
| (Constant) | -36.42053 | -1.963722 | 0.0603 |
| HCE | -2.448519 | -1.602576 | 0.1211 |
| SCE | 60.67383 | 1.841872 | 0.0769 |
| CEE | 8.760318 | 3.958242 | 0.0005* |
| | | | |
| **Panel D: Beverage** | | | |
| (Constant) | -15.81403 | -3.273294 | 0.0024 |
| HCE | 7.637890 | 2.613411 | 0.0130* |
| SCE | -3.339003 | -0.502737 | 0.6182 |
| CEE | 6.293055 | 3.163217 | 0.0032* |
| | | | |
| **Panel E: P/HC** | | | |
| (Constant) | 3.135099 | 0.620410 | 0.5404 |
| HCE | 0.281289 | 0.123574 | 0.9026 |
| SCE | -8.995973 | -0.602783 | 0.5519 |
| CEE | 9.030109 | 6.057744 | 0.0000 |
| | | | |
| **Panel F: Brewery** | | | |
| (Constant) | -18.90217 | -1.160007 | 0.2566 |
| HCE | 3.659437 | 0.738133 | 0.4670 |
| SCE | -19.89840 | -1.000462 | 0.3263 |
| CEE | 16.73596 | 1.526373 | 0.1390 |
| | | | |
| **Panel G: Conglomerates** | | | |
| (Constant) | 3.135099 | 0.620410 | 0.5404 |
| HCE | 0.281289 | 0.123574 | 0.9029 |
| SCE | -8.995973 | -0.602783 | 0.5519 |
| CEE | 9.030109 | 6.057744 | 0.0000* |

**Source:** Researcher's Computations using E-View Software, 2015; * significant at 5% level

**Where:** DV= Dependent Variable; M/BV= Market to Book Value Ratio; EPS= Earnings per Share; NAPS= Net Asset per Share; GR/S: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency and P/HC= Personal/Household

**Interpretation of Regression Results:**

Table 4.3 (Panel A) shows the regression result of the association between Intellectual Capital and Market to Book Value of firms in Nigeria. Analysis indicates that a unit/one naira change in the explanatory variables Intellectual Capital as explained by Human Capital(HC), Structural Capital(SC) and Capital Employed(CE) will yield an increase of 1.859244, decrease by 2.224842 and decrease of 0.753767 respectively in M/BV Ratio in Healthcare. When these values are substituted in Model 2 , this relationship can therefore be represented by the following equation: Thus:

$M/BV_{it}$ = -1.479571 + 1.859244 - 2.224842 -0.753767.

As such, the association between the M/BV Ratio in Nigeria Healthcare Sector and Intellectual Capital as explained by Human Capital (HCE), Structural Capital (SCE) and Capital Employed(CEE) is positive with Human capital, negative for Structural Capital(SCE) and negative with Capital Employed(CEE) respectively.

Further to this, Table 4.3(Panel A) shows that the comprehensive effect of Intellectual Capital on the M/BV Ratio of the Nigerian Healthcare Sector. Human Capital had a positive and significant effect on M/BV Ratio at 0.05 level of significance with a p-value of $x_{1=}$0.0193(HCE); Structural Capital had a negative and insignificant with M/BV ratio at 0.05 level of significance. However, Capital Employed Efficiency shows a negative and significant effect on M/BV ratio at 0.05 level of significance $x_3$=0.0268(CEE).

**Decision:** The P-Value of 0.0193(HCE) and 0.0268(CEE) is less than α-value of 0.05: therefore Ho is rejected and Hi is accepted. However, with 0.1589(SCE) the Ho is accepted while $H_1$ is rejected. This findings negates the hypothesis that Intellectual Capital(HCE and CEE) have no significant effect on M/BV. However, it it supports the earlier hypothesis that IC(SCE) does not have significant effect on M/BV.

Analysis in the ICT Industry as shown by Table 4.3(Panel B) indicates that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital

Employed(CE)}respectively will lead to a decrease of 0.199350, increase of 0.554121 and increase of 0.408114 respectively for HCE, SCE and CEE respectively in M/BV Ratio of the ICT sector in Nigeria. By substituting the values in Model 2, This relationship is therefore represented by the equation below thus:

$M/BV_{it}$ = 5.101534-0.199350+0.554121+0.408114

Following from this, the relationship between the M/BV Ratio and Intellectual Capital in the sector as explained by Human Capital(HC), Structural Capital(SC) and Capital Employed(CE) is negative with Human Capital but positive with SCE and CEE respectively.

**Decision:** The P-Value of $x_{1=}$ 0.6503 (HCE), $x_2$= 0.6510(SCE) and $x_3$= 0.3442 (CEE) respectively are greater than α-value of 0.05, therefore, Ho is accepted and Hi is rejected for all the explanatory variables.

This result supports the hypothesis that IC does not have any significant effect on M/BV Ratio of the firms in the ICT.

**Table 4.3(Panel C)** shows the regression results on the relation between Intellectual Capital and M/BV in Oil and Gas sector. The analysis indicates that a unit/one naira change in the explanatory variables,IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an decrease of -2.448519, 60.67383 and 8.760318 respectively in M/BV ratio in the Oil and Gas sector. By substituting these values in Model 2, the relationship is thus:

$M/BV_{it}$ = -36.42053-2.448519 + 60.67383+8.760318

Analysis further reveals that the effect that HCE had on M/BV in the industry is negative and insignificant at 0.05 level with a p-value of $x_{1=}$0.1211; SCE had a positive and insignificant relationship with M/BV ratio with P- Value of $x_2$= 0.0769 and CEE with $x_3$= 0.0005 respectively is positively and significantly related with M/BV ratio.

**Decision:** Since P-Value of $x_{1=}$ 0.1211 and $x_2$= 0.0769 respectively are greater than α-value at 0.05, null hypothesis is accepted and alternate hypothesis is rejected for HCE and SCE variables. With CEE(P-Value of 0.0005), null hypothesis is rejected while alternate hypothesis is accepted. It therefore means that any increase in HCE will lead to an insignificant decrease in the M/BV ratio of the firms in the Oil and Gas, an increase in SCE in the industry will trigger an insignificant increase there in while any increase in CEE will cause a significant increase in M/BV Ratio in the sector.

Table 4.3(Panel, D) show the regression results of the Food and Beverage industry. Analysis indicate that a unit/one naira change in the Intellectual Capital {HC,SC and C E}respectively will lead to an increase of 7.637890, a decrease of 3.339003 and increase of 6.293055 respectively in the food and beverage sector. By substituting the values in Model 2, the relationship is explained thus:

M/BV$_{it}$ = -15.81403+7.637890-3.339003+6.293055

Table 4.3 (Panel D) reveals the cumulative effect of IC on the M/BV Ratio of beverage sector as results show that the relationship between HCE and M/BV Ratio with P-Value of $x_{1=}$0.013 is positive and significant at 0.05 level of significance. SCE(P-Value of 0.6182) has a negative and insignificant influence on M/BV Ratio while CEE(P-Value of 0.0032) has a positive and significant effect on M/BV Ratio at 0.05 level of significance in that industry.

**Decision:** With P-Value 0.0130(HCE) and 0.0032(CEE) respectively which is less than α-value of 0.05. Ho is rejected and Hi is rejected for HCE and CEE. However, the P-Value of $x_2$=0.6182(SCE) is greater than α-value of 0.05: therefore Ho is accepted and $H_1$ is rejected for SCE.

The above results supports the hypothesis supports the hypothesis that IC does not significantly affect M/B ratio in respect to SCE. The result is however opposed to the hypothesis in respect of HCE and CEE in that sector.

Table 4.3(Panel E) shows regression results of the Personal/ Household Consumables sector. Analysis indicate that a unit/one naira change in the Intellectual Capital{HC,SC and C

E}respectively will lead to an increase of 0.281289, decrease of 8.995973 and increase of 9.030109 respectively in the Personal/Household Consumable sector. By substituting the values in Model 2, the relationship is represented in the equation below:

$$EPS_{it} = 3.135099 + 0.281289 - 8.995973 + 9.030109$$

Table 4.3(Panel E) shows that the cumulative effect of IC on the Personal/Household Consumables sector. The result shows that the effect of HCE on M/BV in the industry had a positive and insignificant at 0.05 level with a P-Value of 0.9026. SCE had a negative and insignificant relationship on M/BV with P-Value of 0.5519. CEE shows a positive and significant on M/BV Ratio with P-Value of 0.0000.

**Decision:** The P-Value of $x_{1=}$ 0.9026 and $x_2 =$ 0.5519 for HCE and SCE respectively, are more than α-value of 0.05, null hypothesis is therefore accepted while alternate hypothesis is rejected for HCE and SCE. Again, CEE, 0.0000) is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted for CEE.

The above results support the hypothesis that IC does not have significant on M/BV Ratio for HCE and SCE it fails to support the hypothesis in CEE. The findings indicates that any increase in HCE will lead to an insignificant increase in the M/BV Ratio, an increase in SCE in the industry will lead to an insignificant decrease in M/BV Ratio, while an increase in CEE will cause a significant increase in M/BV in that sector.

Table 4.3(Panel F) the regression result between Intellectual Capital and M/BV in the brewery sector. Results shows that indicates that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 3.3659437. It will also lead to a decrease of 19.89840 and another increase of 16.73596 respectively in M/BV Ratio of that sector. When these values are substituted in Model 2 will be represented by the equation:

$M/BV_{it}$ = -18.90217+3.3659437-19.89840 +16.73596

Table 4.3(Panel F) further reveals the cumulative effect of IC on  M/BV Ratio in  the  industry. Result indicates that HCE had a positive and  insignificant effect on M/BV Ratio at 0.05 level with a p-value of 0.4670. SCE and CEE had a negative and insignificant influence on M/BV Ratio with P- Value of  $x_2$= 0.3663   and $x_3$= 0.1390  respectively.

**Decision:** Since P-Value of $x_{1=}$ 0.4670 (HCE), $x_2$= 0.3663 (SCE)   and $x_3$= 0.1390 (CEE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory variables.  The findings is in line with the earlier hypothesis that IC does not have a significant effect on M/BV.

**Table 4.4(Panel G)** shows results of the regression on the conglomerates. Findings indicates that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and  Capital  Employed(CE)}respectively  will  lead  to  an  increase  of  0.281289,  a  decrease  of 8.995973 and increase of  9.030109 respectively in the M/BV Ratio in the conglomerates  sector. By  substituting these values on Model 2 , the   relationship can be  represented in the equation below:

$M/BV_{it}$ = 3.135099+ 0.281289 -8.995973+9.030109

Table 4.3(Panel G)   further reveals that the cumulative effect of IC  on  the  conglomerates  in Nigeria.  HCE had a positive and no significant  effect on  M/BV Ratio with a P-Value of 0.9026 at 0.05 level. SCE had a negative and insignificant influence on M/BV Ratio with P- Value of  $x_2$= 0.5519. CEE had a positive and significant relationship with M/BV Ratio with P-Value of  0.05; $x_3$= 0.0000  with P-Value of 0.05.

**Decision:** The P-Value of  0.9026 (HCE) and 0.5519(SCE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HCE and SCE. $x_2$=

0.0000(CEE) respectively is less than α-value of 0.05, null hypothesis is rejected while alternate hypothesis is accepted for CEE.

The result supports the earlier hypothesis that IC does not have a significant effect on M/BV for HCE and SCE while it negates the stated hypothesis in relation to CEE.

### 4.6.3 Test of Hypothesis Three

**Research Question:** To what extent does Intellectual Capital affects Earning per Share of firms in Nigeria?

Ho:  Intellectual Capital does not significantly affect Earnings per Share(EPS) of firms in Nigeria.

**Decision Rule: Decision Rule:**

   1. Reject  Ho if the P-Value cal $< 0.05$ at 5% level of significance.

   2. Otherwise accept the null hypothesis (Ho).

*Relevant data from Appendix 2 through 8 were used in testing of  the hypothesis.

Hypothesis 3 was tested using Model 3 as earlier stated in Chapter 3, thus:

$EPS_{it} = \beta_O + \beta_1(HCE_{it}) + \beta_2(SCE_{it}) + \beta_3(CEE_{it}) + \mu$**........................................................................(3)**

**Table 4.4 Regression Results Showing the effect of Intellectual Capital on EPS of Firms in Nigeria**

| DV: EPS | Coefficient | t-statistics | P-Value |
|---|---|---|---|
| **Panel A: Healthcare** | | | |
| (Constant) | -2.033710 | -2.146281 | 0.0387 |
| HCE | 0.707645 | 1.401293 | 0.1697 |
| SCE | 0.883169 | 0.858030 | 0.3966 |
| CEE | 0.315736 | 1.453467 | 0.1548 |
| | | | |
| **Panel B: ICT** | | | |
| (Constant) | -8.492092 | -2.085066 | 0.0470* |
| HCE | 0.768059 | 1.361700 | 0.1850 |
| SCE | -0.181645 | -0.115663 | 0.9088 |
| CEE | 1.700581 | 0.865945 | 0.3944 |
| | | | |
| **Panel C: Oil & Gas** | | | |
| (Constant) | 26.18444 | 3.136502 | 0.0042 |
| HCE | 1.339735 | 1.948063 | 0.0623 |
| SCE | -35.86033 | -2.418472 | 0.0229* |
| CEE | 2.504432 | 2.513973 | 0.0185* |
| | | | |
| **Panel D: Beverage** | | | |
| (Constant) | -17.51119 | -5.173351 | 0.0000 |
| HCE | 10.57583 | 5.164912 | 0.0000* |
| SCE | -4.182532 | 0.660582 | 0.3747 |
| CEE | 0.920758 | -0.660582 | 0.5131 |
| | | | |
| **Panel E: P/HC** | | | |
| (Constant) | -0.326717 | -0.503678 | 0.6187 |
| HCE | -0.264768 | -0.906136 | 0.3732 |
| SCE | 3.308668 | 1.727110 | 0.0960 |
| CEE | -0.158342 | -0.827500 | 0.4155 |
| | | | |
| **Panel F: Brewery** | | | |
| (Constant) | -3.340496 | -2.729835 | 0.0112 |
| HCE | 2.019169 | 5.423372 | 0.0000* |
| SCE | -1.486808 | -0.995437 | 0.3287 |
| CEE | -0.519674 | 0.631127 | 0.5335 |
| | | | |
| **Panel G: Conglomerates** | | | |
| (Constant) | -0.326717 | -0.503678 | 0.6187 |
| HCE | -0.264768 | -0.906136 | 0.3732 |
| SCE | 3.308668 | 1.727110 | 0.0960 |
| CEE | -0.326717 | -0.827500 | 0.4155 |

**Source:** Researcher's Computations using E-Views Software, 2015; * significant at 5% level of significance.

Where: DV= Dependent Variable; EPS= Earnings per Share. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency and P/HC= Personal/Household Consumables.

**Interpretation of Regression Results:**

Table 4.4(Panel A) shows that the regression result for the firms in the healthcare sector. It indicates that a unit/one naira change in the explanatory variables of Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will yield an increase of 0.707645, another increase of 0.883169 and 0.217230 respectively in EPS in healthcare sector. When these values are substituted in Model 3, we have the following equation:

$EPS_{it}$ = -2.033710 +0.707645+ 0.883169 + 0.315736

Table 4.4(Panel A) which reveals the comprehensive effect of IC on the Earnings per Share shows that the relationship between IC and EPS in the healthcare industry is positive at 5% level of insignificance. Human Capital, Structural Capital and Capital Employed have p-values of $x_{1}$=0.1697(HCE), $x_{2}$=0.3966(SCE) and $x_{3}$=0.1548(CEE).

**Decision:** Since the P-Value is 0.1697(HCE), 0.3966(SCE) and 0.1548(CEE) are greater than α-value of 0.05: therefore Ho is accepted and alternate hypothesis is rejected in each case.

The findings support the earlier stated hypothesis that Intellectual Capital has no significant effect on Earnings per Share of firms in Nigeria.

Table 4.4(Panel B) shows regression analysis between IC and EPS in the ICT sector. The result shows that a unit/one naira change in the explanatory variable, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 0.768059, decrease of 0.181645 and increase of 1.700581 for HC, SC and CE respectively in EPS of the ICT sector. By substituting these values in Model 3, the relationship will be represented by the following equation:

$EPS_{it}$ = -8.492092+0.768059-0.181645 +1.700581

The result shows that IC{HCE and CEE} has a positive and insignificant effect on EPS in the ICT sector at 0.05 the level of significance. However, the association between SCE with EPS is negative and insignificant. Their P-Value of 0.1850(HCE), 0.9088(SCE) and 0.3944(CEE) respectively.

**Decision:** The P-Value of 0.1850(HCE), $x_2$= 0.9088(SCE) and $x_3$= 0.3944 (CEE) respectively are greater than α-value of 0.05, therefore Ho is accepted and Hi is rejected for all the explanatory variables.

The findings support the earlier stated hypothesis that Intellectual Capital has no significant effect on Earnings per Share of firms in Nigeria.

Table 4.4(Panel C) shows the regression result between IC{HC,SC and C E} and EPS in the Oil and Gas industry. The analysis shows that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to an increase of 1.3349735, decrease of -35.86033 and increase of 2.504432 respectively in EPS in the Oil and Gas sector. This relationship is represented by the equation:

$EPS_{it}$ =26.18444+ 1.339735 -35.86033+2.504432

Table 4.4 (Panel C) reveals the cumulative effect of IC on the Oil and Gas sector. The result shows that the SCE has negative and significant at 0.05 level with a p-value of 0.0229. HCE, 0.0.0623 has positive and insignificant influence on EPS in that sector while CEE with 0.0185 positively and significantly related to EPS.

**Decision:** Since the P-Value of HCE, 0.0623 is greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HCE. For SCE, 0.0229 and CEE, 0.0185 is less than α-value of 0.05 respectively, null hypothesis is rejected while alternate hypothesis is accepted. Again, CE, $x_2$= 0.0229 is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted for CE.

Findings means that any increase in HCE will lead to an insignificant increase in the EPS of the firms in the Oil and Gas. Increase in SCE in the industry will lead to an significant decrease in EPS. However, any increase in CEE will cause a significant increase in EPS in that sector. The result on the HCE supports the hypothesis that IC has an insignificant effect on EPS. Result on SCE and CEE negates that hypothesis.

Table 4.4(Panel D) shows the result of regression analysis between IC and EPS in the Food and Beverage sector. The findings indicates that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to an increase of 10.57583, a decrease of 4.182532 and an increase of 0.920758 respectively in the beverage sector. This relationship is represented by:

$EPS_{it}$ = -17.51119+10.57583 -4.182532-0.920758

Table 4.4 reveals the cumulative effect of IC on the EPS of the food and beverage sector. The result shows that the HCE has a positive and significant effect on EPS in the industry at 0.05 level of significance. The relationship has a P-Value of $x_{1=}$0.0000. However, SCE with P-Value of 0.3747 has a negative and insignificant effect on the EPS in the sector. CEE has a positive and insignificantly relationship between and EPS with a P-Value of $x_3$=0.5131 at

**Decision:** The P-Value of $x_1$=0.0000(HCE) is less than α-value at 0.05 level of significance. Therefore, Ho is rejected and Hi is accepted for HCE. The P-Value of 0.3747(SCE) and 0.5131(CEE) which are more than α-value of 0.05 of significance. Thus, Ho is accepted and Hi is rejected.

The above results support the hypothesis that IC has no significant effect on EPS for SCE and CEE. However, the result is not supported by the findings between HCE and EPS in the Food and Beverage sector in Nigeria.

Table 4.4(Panel E) shows that regression analysis result on the Personal and Household Consumables(P/HC). The results indicate that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to a decrease of 0.264768, increase of 3.308668 and decrease of 0.158342 respectively in EPS in the Personal/Household Consumable sector. This relationship is represented by the equation stated below:

$EPS_{it}$ = -0.326717-0.264768+3.308688-0.158342

The result shows that HCE and CEE had a negative and insignificant effect on EPS in that sector at 0.05 level with a P-Value of 0.3732 and 0.4155 respectively. However, SCE with 0.0960 has a negative insignificant effect on EPS.

**Decision:** Since the P-Value of HCE: 0.3732, SCE: 0.0960 and CEE: 0.4155 respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory variables in the sector that IC has a significant effect on EPS in the P/HC sector.

The findings support the hypothesis that IC{HCE,SCE and CEE} has no significant effect on EPS.

Table 4.4(Panel F) shows regression result between IC and EPS in the Brewery Sector. The result show that a unit/one naira change in the explanatory variables,IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 2.019169, decrease of 1.486808 and further decrease of 0.519674 respectively in EPS in the brewery sector. By substituting these values in Model 3, then the relationship is represented by:

$EPS_{it}$ = -3.340496+ 2.019169 -1.486808 -0.519674

The result shows that the relationship between HCE and EPS in the industry is significant at 0.05 level with a p-value of 0.0000 (HCE); SCE and CEE have a negative and insignificant influence on EPS with P- Value of 0.3287 (SCE) and 0.5335 (CEE) respectively.

**Decision:** The P-Value of $x_1 = 0.0000$ (HCE) is less than α-value (level of significance, accordingly null hypothesis is rejected and alternate is accepted . However, $x_2 = 0.3287$ (SCE) and $x_3 = 0.5335$ (CEE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected.

The result for HCE is opposed to the hypothesis that IC has no significant effect on EPS while the result for SCE and CEE supports the hypothesis.

Table 4.4(Panel G) shows regression result between IC IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}. Findings indicate that a unit/one naira change in the explanatory variables, respectively will lead to a decrease of 0.264768, increase of 3.308668 and a decrease 0.158342 respectively in the Conglomerates sector. The relationship is represented by the equation:

$$EPS_{it} = -0.326717 - 0.264768 + 3.308668 - 0.158342$$

Result reveals that the cumulative effect of IC on the Conglomerate of sector. The result shows that the relationship between HCE, CEE, and EPS in the industry is insignificant at 0.05 level with a p-value of $x_1 = 0.3732$ and $x_3 = 0.4155$. SCE had an insignificant relationship with EPS with P-Value of $x_2 = 0.3732$ (SCE).

**Decision:** The P-Value of 0.0020(HCE), 0.5160 (SCE) and 0.4515 (CEE) respectively are greater than α-value of 0.05, therefore the null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory variables.

The implication of these findings is that any increase in HCE and CEE will lead to an insignificant decrease in the EPS of the firms while increases in SCE will cause an insignificant increase in EPS in that sector.

The above findings for HCE and CEE support the earlier hypothesis that IC has no significant effect on EPS while the result for SCE fails to support the hypothesis.

**4.6.4 Test of Hypothesis Four:**

**Research Question:** To what extent does Intellectual Capital affect  Net Assets  per Share(NAPS) of firms in Nigeria?

**Hypothesis 4:**

Ho: Intellectual Capital has no significant effect on  Net Asset per Share(EPS) of firms in Nigeria.

**Decision Rule:**

     **1.** Reject  Ho if the P-Value cal < 0.05 at 5% level of significance.

     **2.** Otherwise accept the null hypothesis (Ho).

Model  4 as stated in Chapter was used in testing hypothesis 4 thus:

$\textbf{NAPS}_{\textbf{it}} = \beta_O + \beta_1(HCE_{it}) + \beta_2(SCE_{it}) + \beta_3(CEE_{it}) + \mu$**......................................................................(4)**

**\*** Relevant Data on Appendix 2 through 8 and Appendix 72 were used in testing the hypothesis

**Table 4.5 Regression Results Showing the Effect of Intellectual Capital on NAPS of Firms in Nigeria**

| DV: NAPS | Coefficient | t-statistics | P-Value |
|---|---|---|---|
| **Panel A: Healthcare** | | | |
| (Constant) | -1.997154 | -0.885209 | 0.3819 |
| HCE | 1.863756 | 1.550026 | 0.1299 |
| SCE | 1.371629 | 0.559670 | 0.5792 |
| CEE | 0.539137 | 1.042358 | 0.3042 |
| $R^2$ Adjusted | | | 0.253458 |
| **Panel B: ICT** | | | |
| (Constant) | 3.004758 | 1.318650 | 0.1988 |
| HCE | 0.661539 | 2.096318 | 0.0459* |
| SCE | 0.047661 | 0.054244 | 0.9572 |
| CEE | 0.183351 | 0.166875 | 0.8688 |
| **$R^2$ Adjusted** | | | 0.059525 |
| **Panel C: Oil & Gas** | | | |
| (Constant) | 62.04959 | 2.028180 | 0.0529 |
| HCE | 2.379577 | 0.944167 | 0.3538 |
| SCE | -18.46083 | -0.339737 | 0.7368 |
| CEE | -19.34400 | -5.298618 | 0.0000 |
| $R^2$ Adjusted | | | 0.541111 |
| **Panel D: Beverage** | | | |
| **(Constant)** | 8.151563 | 1.253724 | 0.2180 |
| HCE | 9.245354 | 2.350588 | 0.0243* |
| SCE | -16.6412 | 1.861777 | 0.0708 |
| CEE | -3.027863 | -1.130895 | 0.2656 |
| $R^2$ Adjusted | | | 0.06788 |
| **Panel E: P/HC** | | | |
| (Constant) | 13.01421 | 2.313828 | 0.0288 |
| HCE | -3.624327 | -1.430495 | 0.1645 |
| SCE | 11.47441 | 0.690763 | 0.4958 |
| CEE | -5.176665 | -3.119994 | 0.0044* |
| $R^2$ Adjusted | | 0.271160 | |
| **Panel F: Brewery** | | | |
| (Constant) | -7.754107 | -2.272683 | 0.0315 |
| HCE | 5.739395 | 5.528973 | 0.0000* |
| SCE | -4.952485 | -1.189224 | 0.2451 |
| CEE | -3.371333 | -1.468485 | 0.154 |
| $R^2$ Adjusted | | | 0.577295 |
| **Panel G: Conglomerates** | | | |
| (Constant) | -25.83061 | -3.063744 | 0.005 |
| HCE | 5.875585 | 1.581983 | 0.1257 |
| SCE | 0.497054 | 0.023104 | 0.9817 |
| CEE | 44.05528 | 2.249292 | 0.0332* |

**Source:** Researcher's Computations using E-Views, 2015; * significant at 5% level of significance

**Where:** DV= Dependent Variable; NAPS= Net Asset per Share; HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency, CEE= Capital Employed Efficiency and P/HC= Personal/Household Consumables.

**Interpretation of Regression Results:**

Table 4.5(Panel A) shows that regression result between Intellectual Capital and Net Assets per Share Value(NAPS) in the healthcare sector in Nigeria. The results indicates that a unit/one naira change in the explanatory variables, IC, Human Capital Efficiency(HC), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CE) will cause an increase of 1.863756, increase of 1.371529 and increase of 0.539137 respectively in NAPS in healthcare sector. When these values are substituted im Model 4 and thus the following equation:

$NAPS_{it}$ = 1.997154+1.863756+1.371529 +0.539137

Result reveals that the cumulative effect of IC on the healthcare sector. The result shows that the relationship between HCE, SCE and CEE with and EPS in the industry is positive and insignificant at 0.05 level with a p-value of HCE: 0.1299; SCE:0.5792 and CEE is 0.3042.

**Decision:** Since P-Value of HCE: 0.1299; SCE:0.5792 and CEE is 0.3042 respectively are greater than α-value of 0.05, therefore the null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory variables.

The implication of these findings is that any increase in HCE and CEE will lead to an insignificant increase in the NAPS of the firms in that sector.

The above findings support the earlier hypothesis that IC has no significant effect on EPS while the result for SCE fails to support the hypothesis.

**Decision:** The P-Value of $x_1$=0.1299(HC), $x_2$=0.5792(SC) and $x_3$=0.3042(CEE) is greater than α-value of 0.05: therefore Ho is accepted.

The implication is that any increase in IC will lead to an insignificant increase in the NAPS of the firms in that sector in Nigeria.

Table 4.5(Panel B) shows that regression result between Intellectual Capital and NAPS in the ICT sector. The findings indicate that unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 0.661539, 0.047661 and 0.183351 respectively in NAPS of the ICT sector. If this values are substituted in Model 4, the relationship will be represented by the equation:

$NAPS_{it} = 3.004758 + 0.661539 + 0.047661 + 0.183351$

The result shows that the effect of HCE on NAPS in the industry is positive and significant at 0.05 level for HCE with a p-value of $x_{1} = 0.0459$(HCE). Results indicate that SCE and CEE is positively and insignificantly related with NAPS. SCE and CEE have a p-value of $x_{2} = 0.9572$(SCE) and $x_{3} = 0.8688$(CEE) respectively.

**Decision:** The P-Value of $x_{1} = 0.0459$(HCE) is less than α-value of 0.05, null hypothesis is rejected while alternate hypothesis is accepted. With 0.9572(SCE) and 0.8688(CEE) respectively are greater than α-value of 0.05, therefore Ho is accepted and $H_1$ is rejected for SCE and CEE in the ICT sector.

Accordingly, the findings in respect of HCE fails to support the hypothesis that IC has no significant on NAPS. However, the results on SCE and CEE supports the hypothesis.

Table 4.4(Panel C) presents the result of the regression between Intellectual Capital and NAPS in Oil and Gas Sector. Result however show that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to an increase of 2.379577, decrease of -18.46083 and 19.34400 respectively in NAPS in the Oil and Gas sector. This relationship is represented thus:

$NAPS_{it} = 62.04959 + 2.379577 - 18.46083 - 19.34400$

Table 4.4(Panel C) further reveals the cumulative effect of IC on NAPS in the Oil and Gas sector at 0.05 with a P-Value of 0.3538 positive and insignificant. SCE has a negative and insignificant effect on the NAPS with P-Value of 0.7368. CEE has a negative and has a significant effect on NAPS with P-Value of 0.0000.

**Decision:** The P-Value of $x_{1=}$ 0.3538 (HCE) and $x_2$= 0.7368(SCE) repectively is more than α-value of 0.05, respectively, therefore null hypothesis is accepted while alternate hypothesis is rejected. However, CEE, $x_3$=0.0000 is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted for the explanatory variable CEE.

In line with the findings, any increase in HCE will lead to an insignificant increase in the Net Asset per Share of the firms in the Oil and Gas, an increase in SCE in the industry will lead to a insignificant decrease in NAPS, while an increase in CEE will cause a significant decrease in the NAPS in that sector.

Table 4.5(Panel D) shows the regression result between IC and Net Asset per Share Value(NAPS) in the Food and Beverage Sector. The results show that a unit/one naira change in the Intellectual Capital {HC,SC and CE} in that sector will lead to an increase of 9.245354, an decrease of 16.64120 and decrease of 3.027863 respectively in the beverage sector. This relationship is represented as:

$NAPS_{it}$ = 8.151563+9.245354-16.64120 -3.027863

Result also reveals that the cumulative effect of IC on the Net Asset per Share(NAPS) of Food and Beverage sector. The result shows the relationship between IC(HCE, SCE and CEE) and in Food & Beverage sector at 0.05 level of significance. It shows that with a p-value of $x_{1=}$0.0243(HCE), $x_2$=0.0708(SCE) and $x_3$=0.2656(CEE) respectively. HCE has a positive and significant effect on NAPS. SCE has a negative and insignificant influence on NAPS, while CEE had a negative and insignificant effect on NAPS in that sector.

**Decision:** The P-Value of $x_2$=0.0708(SCE) and $x_3$=0.2656(CEE) are greater than α-value of 0.05: therefore Ho is accepted and Hi is rejected for SCE and CEE. P-Value of $x_{1=}$0.00248(HCE) which is less than α-value of 0.05, therefore Ho is rejected and Hi is accepted.

In line with these findings, any increase in Human Capital will lead to an increase in the NAPS while increase in SC and CE will decrease Net Asset per Share of firms in the beverage industry of Nigeria.

Table 4.4(Panel E) shows that regression result between IC and NAPS in the P/HC. Results indicate that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively will lead to an decrease of -3.624327, an increase of 11.47441 and decrease of 5.176660 respectively in NAPS in the Personal/Household Consumable sector. When the regression values are substituted in the Model 4, the relationship is thus represented:

$NAPS_{it}$ =-0.326717-3.624327+11.47441 -5.176660

Table 4.5(Panel E) reveals the cumulative effect of IC on the Personal/Household Consumables sector. The result shows that HCE has a negative and insignificant effect at 0.05 level with a P-Value of $x_1$= 0.1645. The result shows that the relationship between SCE in the industry is insignificant at 0.05 level with a P-Value of $x_2$= 0.4958 . The result shows that the relationship between CEE in the industry is significant at 0.05 level with a P-Value of $x_3$= 0.0044.

**Decision:** The P-Value of $x_1$= 0.1645, is more than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HCE. Structural Capital $x_2$= 0.4958 is less than α-value of 0.05, null hypothesis is rejected while alternate hypothesis is accepted. Again, CEE, $x_3$= 0.0044, is less than α-value of 0.05, and null hypothesis is accepted while alternate hypothesis is rejected for CE.

Accordingly, findings on HCE and SCE support the hypothesis that IC has no significant effect on NAPS. However, the result on CEE contradicts the hypothesis in the P/HC sector.

Table 4.5(Panel F) shows the regression result of the brewery sector. Results indicate that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 5.739395, decrease of

4.952485 and an decrease of 3.371333 respectively in NAPS in the brewery sector. By substituting these values in Model 4 the relationship is then represented as:

$NAPS_{it}$ = -7.754107 +5.739395-4.952485 -3.371333

Table 4.5(Panel F) reveals the cumulative effect of IC on the NAPS of brewery sector. The result shows that HCE has a positive and significant at 0.05 level with a p-value of 0.0000; SCE and CEE have a negative and insignificant effect on NAPS with P- Value of 0.2451 (SCE) and 0.1540 (CEE) respectively in that sector.

**Decision:** The P-Value of $x_{1=}$ 0.0000 (HCE) is less than critical significant at 0.05 level, therefore null hypothesis is rejected and alternate hypothesis is accepted. Again, $x_2$=0.2451 (SC) and $x_3$= 0.1540(CEE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected.

Accordingly, findings on SCE and CEE support the hypothesis that IC has no significant effect on NAPS. However, the results on HCE contradicts the hypothesis in the P/HC sector.

Table 4.5(Panel G) presents the results of regression of the effect of IC on Net Assets per Share Value. Result show that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively  will lead to an increase of 5.875585, 0.497054  and 44.05528 respectively in NAPS in the conglomerate sector. By substituting the values in the Model 4, the equation is thus represented:

$NAPS_{it}$ = -25.83061+5.875585+0.497054+44.05528

Analysis further reveals that HCE and SCE affects NAPS in  the  industry  positively and insignificantly at 0.05 level with a p-value of 0.1257 and $x_2$= 0.9817.  CEE had a positive and significant effect on NAPS with P- Value of $x_3$= 0.0332.

**Decision:** Since the P-Value of 0.1257(HCE) and $x_2$= 0.9817 (SCE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected. However,  for CEE

with P- Value of $x_3$= 0.0332, the alternate hypothesis is accepted while null is rejected.

It therefore suggests  that the findings in HCE and SCE support the hypothesis that IC does not have a significant effect NAPS. However, the result from CEE means that the do not support the hypothesis that IC has a significant effect on NAPS.

 The implications of the findings are that any increase in HC and SC will lead to an increase in the NAPS of the firms in the conglomerate industry while increases in CE will trigger an increase in NAPS.

### 4.6.5  Test of Hypothesis Five

**Research Question:** To what extent does Intellectual Capital influence Gross Revenue per Share(GPRS)  of firms in Nigeria?

**Hypothesis 5**

Ho: Intellectual Capital has no significant effect on Gross Revenue per Share(GPRS) of firms in Nigeria.

**Decision Rule:**

1. Reject Ho if the P-Value cal < 0.05 at 5% level of significance.

2. Otherwise accept the null hypothesis (Ho).

Model 4 as stated in Chapter was used in testing hypothesis 4 thus:

$GRPS_{it} = \beta_O + \beta_1(HCE_{it}) + \beta_2(SCE_{it}) + \beta_3(CEE_{it}) + \mu$**.........................................................................(5)**

*Relevant data from Appendix 2 through 8 were used in testing the hypothesis. Thus:

**Table 4.6:  Regression Results showing the effect of  Intellectual Capital on Gross Revenue per Share(GPRS)  of firms in Nigeria.**

| DV: GRPS | Coefficient | t-statistics | P-Value |
|---|---|---|---|
| **Panel        A: Healthcare** | | | |
| (Constant) | 4.506868 | 1.454260 | 0.1545 |
| HCE | 2.406691 | 1.457147 | 0.1537 |
| SCE | -0.351619 | -0.104448 | 0.1974 |
| CEE | 0.028980 | 0.040789 | 0.9677 |
| $R^2$ Adjusted | | | 0.0693 |
| **Panel B:  ICT** | | | |
| (Constant) | 4.676727 | 0.903630 | 0.3745 |
| HCE | 1.283107 | 1.790164 | 0.0851 |
| SCE | 0.520233 | 0.260683 | 0.7964 |
| CEE | 0.170296 | 0.068240 | 0.9461 |
| $R^2$ Adjusted | | | 0.0246 |
| **Panel C: O & G** | | | |
| (Constant) | 555.3525 | 1.557764 | 0.1314 |
| HCE | 40.32443 | 1.373039 | 0.1815 |
| SCE | -203.9155 | -0.322039 | 0.7500 |
| CEE | -124.2630 | -2.920947 | 0.0071* |
| $R^2$ Adjusted | | | 0.3496 |
| **Panel D: F &B** | | | |
| (Constant) | -34.85358 | -1.649810 | 0.1077 |
| HCE | 34.47853 | 2.697909 | 0.0106* |
| SCE | -6.162999 | -0.212207 | 0.8331 |
| CEE | 14.30085 | 1.643893 | 0.1089 |
| $R^2$ Adjusted | | | 0.3422 |
| Panel E: P/HC | | | |
| (Constant) | 15.99633 | 2.592578 | 0.0154 |
| HCE | 0.157858 | 0.056797 | 0.9551 |
| SCE | 4.378766 | 0.240297 | 0.8120 |
| CEE | -6.247896 | -3.432701 | 0.0020* |
| $R^2$ Adjusted | | | 0.2501 |
| Panel F: Brewery | | | |
| (Constant) | -14.87171 | -1.567154 | 0.1292 |
| HCE | 14.01071 | 4.852683 | 0.0000* |
| SCE | -13.77278 | -1.189065 | 0.2452 |
| CEE | -5.503802 | -0.861935 | 0.3966 |
| $R^2$ Adjusted | | | 0.5063 |
| Panel        G: Conglomerates | | | |
| (Constant) | -12.75981 | -0.863137 | 0.3963 |
| HCE | 14.28862 | 2.220647 | 0.0357* |
| SCE | -67.13018 | -1.803031 | 0.0835 |
| CEE | 97.82781 | 2.839256 | 0.0089* |
| $R^2$ Adjusted | | | 0.3142 |

**Source:** Firms' Financial Statements/ Researcher's Computations, 2015; * significant at 5% level of significance

Where: DV: Dependent Variable;  GRPS: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

**Interpretation of Regression Results:**

Table 4.6(Panel A) presents the result of the regression between Intellectual Capital and Gross Revenue per Share. Results show that a unit/one naira change in the explanatory variables, HCE,SCE and CEE respectively will lead to an increase of 2.406691, a decrease 0.351619 and an increase of 0.028980 respectively in GRPS of the healthcare sector. When the values are substituted in Model 5, the relationship will be represented by the following equation:

$GRPS_{it} = 4.506868 + 2.406691 - 0.351619 + 0.351619$

Table 4.6(A) further shows that the rate of change in the GRPS which arose as a result of the firms in healthcare industry ability to apply the three coefficient of Human Capital is positive and insignificant for HCE, negative and insignificant for Structural Capital and positive and insignificant for Capital Employed in their operations is positive and insignificant at 0.05 level. a P-Value of $x_{1=}0.1537$(HCE), $x_2=0.1974$(SCE) and $x_3=0.9677$(CEE).

**Decision:** Since P-Value of 0.1537(HCE); $x_2=0.9174$(SCE) and $x_3=0.9677$(CEE) is greater than α-value of 0.05: therefore, Ho is accepted and the alternate is rejected.

It therefore follows that any naira/unit increase in investment IC will lead to an increase in the GRPS while an increase in SCE will cause a decrease of GRPS in the Healthcare industry in Nigeria.

Table 4.6(Panel B) shows the result of regression between Intellectual Capital and GRPS in the ICT sector. Results show that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 1.283107, 0.520233 and 0.170296 respectively in GRPS of the ICT sector. This relationship is represented by the equation:

$GRPS_{it} = 4.676727 + 1.283107 + 0.520233 + 0.170296$

Table 4.5 reveals the cumulative effect of IC{ HCE, SCE and CEE} affects GRPS  in the ICT sector  is positive and insignificant at 0.05 level with a p-value of 0.0459, 0.7964 and 0.9461(CE) respectively.

**Decision:** Since  P-Value of $x_{1=}$ 0.0459(HC), $x_2$= 0.7964(SC)  and $x_3$= 0.9461(CE) is greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory  variables.

The findings means that any increase in HCE, SCE and CEE will lead to an increase in the GRPS of the firms in the ICT industry. This result supports the hypothesis that IC does not significantly affect GRPS.

Table 4.6(Panel C) the regression results between IC and GRPS in the Oil and Gas industry. Result show  that a unit/one naira change in the Intellectual Capital{HC,SC and C E}respectively  will lead to an increase of  40.32443, a decrease of 203.9155 and 124.2630 respectively in GRPS  in the Oil and Gas Sector. Substituting these values in Model 5 the equation will be represented thus:

$$GRPS_{it} =555.3525+ 40.32443- 203.9155-124.2630$$

Analysis further  reveals the cumulative effect of IC on the Oil and Gas sector with  results shows HCE impacts positively  and insignificantly on GRPS that sector  at 0.05 level with a p-value of $x_2$= 0.1815. Structural Capital had an insignificant relationship affects   GRPS P-Value of $x_{1=}$0.07500 while  CEE with $x_3$= 0.0071  respectively shows a significant relationship with  GRPS.

**Decision:** The P-Value of  0.1815(HCE), is less than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HCE. Structural Capital $x_2$= 0.7500(SCE) is less than  α-value of 0.05 , null hypothesis is accepted while alternate hypothesis is rejected. Again, CEE, with p- value of 0.0071 which is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted.

The results suggest that any increase in HCE will lead to an increase in the Gross Revenue per Share of the firms in the Oil and Gas, an increase in SCE in the industry will lead to a decrease in GRPS, while an increase in CE will cause a decrease in the GRPS in that sector.

The above result (HCE and SCE) supports the hypothesis that IC does not significantly enhance GRPS. The hypothesis is also contradicted by the findings shown by CEE which state that IC significantly enhance GRPS.

Table 4.5(Panel D) shows the regression result between IC and GRPS in the Food and Beverage Sector. Analysis show that a unit/one naira change in the Intellectual Capital {HC,SC and C E}respectively will lead to an increase of 34.47853, a decrease of 6.162999 and increase of 14.30085 respectively in the food and beverage sector. This relationship is represented in the following equation:

$GRPS_{it}$ = -34.85358+34.47853-6.162999+14.30085

Analysis also reveals that the cumulative effect of IC on the Gross Revenue per Share(GRPS) of the beverage sector. The result shows that IC( and in beverage sector at 0.05 level of significance. With a p-value of 0.0106(HCE), 0.8331(SCE) and 0.1089(CEE), HCE has a positive and significantly effect on GRPS. SCE had a negative and insignificant effect on GRPS in that sector while CE has positive and insignificant effect on GRPS.

**Decision:** The P-Value of 0.8331(SCE) and 0.1089(CEE) are greater than α-value of 0.05: therefore Ho is accepted and $H_1$ is rejected for SCE and CEE. P-Value of $x_{1=}$0.0106(HCE) which is less than α-value of 0.05, therefore Ho is rejected and Hi is accepted.

The findings show that any increase in Human Capital and Capital Employed will lead to increase in the GRPS while an increase in SCE will decrease GRPS in the Food and Beverage industry in Nigeria. These results(SCE and CEE) support the hypothesis that Intellectual Capital do not have a significant effect on GRPS.

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Table 4.6(Panel E) presents the regression result  between IC and GRPS. Results show that a unit/one naira change in the Intellectual Capital{HCE,SCE and CEE}respectively  will lead to an increase of  0.157858,4.378766 and a  decrease of  6.247896  respectively  in  GRPS  in  the Personal/Household Consumable sector. By substituting in Model 5 the  relationship is represented by the equation below:

GRPS$_{it}$ = 15.99633+ 0.157858+4.378766- 6.247896

Analysis also reveals that the cumulative effect of IC on the Personal/Household Consumables sector  The result shows that the relationship between HC  in  the  industry  is significant at 0.05 level with a p-value of $x_2$= 0.9551.  SCE has an insignificant effect on GRPS  with P- Value of $x_{2=}$0.8120  and  CE with $x_3$= 0.0020 respectively is significantly related to GRPS.

**Decision:** The P-Value of $x_{1=}$ 0.9551 and  $x_{2=}$0.8120 is more than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HC and Structural Capital. CEE, $x_3$= 0.0020  is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted.

The findings  show  that any increase in HCE and SCE will lead to an increase in the GRPS of the firms in the Personal/Household Consumable sector in Nigeria  while  an increase in CEE will cause a decrease in GRPS in that sector.

Table 4.5(Panel F) is the regression result between IC and GRPS in the brewery sector in Nigeria. Analysis show that a  unit/one naira change in the explanatory variables,IC{Human Capital(HC), Structural Capital(SC)  and  Capital  Employed(CE)}respectively  will  lead  to  an  increase  of 14.01071, 13.77278 and 5.503802 respectively in GRPS in the brewery sector. This relationship is represented by the equation:

GRPS$_{it}$ = 14.87171+ 14.01071-13.77278 -5.503802

Table 4.5(Panel F) also  reveals the cumulative effect of IC on the brewery sector. The result shows that  HCE with a p-value of $x_{1=}$0.0000, had a positive and significant effect on GRPS in  the

industry. SCE and CEE have a negative and insignificant effect on GRPS with P-Value of 0.2452 and 0.3966 respectively.

**Decision:** The P-Value of HCE is 0.0000 and is > than 0.05. For this the Ho is rejected while the alternate hypothesis is accepted while SCE and CEE meaning that respectively are greater than α-value of 0.05, null hypothesis is accepted while SCE and CEE with P-Value of 0.2452 and 0.3966 respectively is > 0.05 and thus null hypothesis is accepted.

HCE outcome do not support hypothesis that IC has no significant effect on GRPS. The result for SCE and CEE supports the hypothesis in the brewery sector.

Table 4.5(Panel G) shows regression result between IC and GRPS in the conglomerates sector. Analysis indicate that that a unit/one naira change in the explanatory variables, IC {Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 14.28862, a decrease of 67.13018 and an increase of 97.82781 respectively in GRPS in the conglomerates sector. By substituting the values in Model 5, the relationship is then represented in equation below, thus:

$GRPS_{it} = -12.75981 + 14.28862 + 67.13018 + 97.82781$

The result also shows that HCE has a positive and significant impact on GRPS at 0.05 level with a P-value of 0.0357. SCE had a negative and insignificant influence on GRPS, with P-Value of 0.0835. However, CEE had a positive and significant effect on GRPS, with P-Value of 0.0089.

**Decision:** The P-Value of 0.0357 HCE and CEE of 0.0089 are less than 0.05 respectively, thus null hypothesis is rejected while alternate hypothesis is accepted for HCE and CEE while, null hypothesis is accepted for SCE; and alternate hypothesis is rejected.

The findings for HCE and CEE support the hypothesis that IC has significant effect on GRPS. However, that of the SCE negates the hypothesis.

**4.6.6 Test of Hypothesis Six:**

**Research Question 6:** How does Intellectual Capital affect  Share Price(SP) of firms?

**Hypothesis 6**

Ho: Intellectual Capital does not significantly affect  Share Price(SP) of firms in Nigeria.

**Decision Rule:**

1. Reject  Ho if the P-Value cal < 0.05 at 5% level of significance.

2. Otherwise accept the null hypothesis (Ho).

*Relevant data from Appendix 2 through 8 were used in testing the  above hypothesis.

Model 6  as earlier stated in Chapter 3 will be used in testing the hypothesis thus:

$$\mathbf{SP_{it}} = \beta_O + \beta_1(HCE_{it}) + \beta_2(SCE_{it}) + \beta_3(CEE_{it}) + \mu \text{.................................................................}\mathbf{(6)}$$

**Table 4.7 Regression results showing the effect of Intellectual Capital on Share Price of Firms in Nigeria**

| DV: SP | Coefficient | t-statistics | P-Value |
|---|---|---|---|
| **Panel A: Healthcare** | | | |
| (Constant) | -9.479825 | -1.485589 | 0.1461 |
| HCE | 9.534646 | 2.803616 | 0.0081* |
| SCE | -7.851133 | -1.132639 | 0.2649 |
| CEE | -0.835512 | -0.571129 | 0.5715 |
| $R^2$ Adjusted | | | 0.1849 |
| | | | |
| **Panel B: ICT** | | | |
| (Constant) | 2.389360 | 10.29740 | 0.0000 |
| HCE | 0.047328 | 1.472811 | 0.1528 |
| SCE | -0.098367 | -1.099419 | 0.2817 |
| CEE | -0.013441 | -0.120131 | 0.9053 |
| $R^2$ Adjusted | | | -0.0065 |
| | | | |
| **Panel C: O & G** | | | |
| (Constant) | 27.83781 | 0.248464 | 0.8057 |
| HCE | -8.288547 | -0.898024 | 0.3774 |
| SCE | 76.50005 | 0.384427 | 0.7038 |
| CEE | 75.94655 | 5.680477 | 0.0000* |
| $R^2$ Adjusted | | | 0.5690 |
| | | | |
| **Panel D: Beverage** | | | |
| (Constant) | -444.8385 | -3.538643 | 0.0011 |
| HCE | 305.2802 | 4.014439 | 0.0003* |
| SCE | -222.9452 | -1.290073 | 0.2053 |
| CEE | -5.706745 | -0.110242 | 0.9128 |
| $R^2$ Adjusted | | | 0.3393 |
| | | | |
| **Panel E: P/HC** | | | |
| (Constant) | 15.84642 | 0.882000 | 0.3859 |
| HCE | -7.678642 | -0.948785 | 0.3515 |
| SCE | 31.82429 | 0.599766 | 0.5539 |
| CEE | 6.015350 | 1.134981 | 0.2667 |
| $R^2$ Adjusted | | | -0.022 |
| | | | |
| **Panel F: Brewery** | | | |
| (Constant) | -42.57255 | -1.357047 | 0.1864 |
| HCE | 37.44913 | 3.923541 | 0.0006* |
| SCE | -25.21416 | -0.658480 | 0.5160 |
| CEE | -16.13675 | -0.764438 | 0.4515 |
| $R^2$ Adjusted | | | 0.4155 |
| | | | |
| **Panel G: Conglomerates** | | | |
| (Constant) | -31.62693 | -3.547265 | 0.0015 |
| HCE | 9.862790 | 2.511130 | 0.0186* |
| SCE | -19.85566 | -0.872758 | 0.3908 |
| CEE | 78.93413 | 3.810935 | 0.0008* |
| $R^2$ Adjusted | | | 0.35604 |

Source: Researcher's Computations using E-Views 8.0 Software, 2015; * significant at 5% level of significance

**Where:** SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency, CEE= Capital Employed Efficiency and PH/C= Personal/ Household Consumables.

**Interpretation of Regression Results:**

Table 4.7(Panel A) shows the regression results between Intellectual Capital( HCE, SCE and CEE) and Share Price of firms in the healthcare sector in Nigeria. Analysis shows that a unit/one naira change in the explanatory variables HCE, SCE and CEE respectively will lead to an increase of 9.534646(HC) a decrease of 7.851133 and 0.835512 for SCE and CEE respectively in SP in the Healthcare sector. This relationship is represented by the equation:

$SP_{it}$ = -9.479825+9.534646-7.851133 -0.835512

Analysis further reveals that the cumulative effect of IC on Share Price (SP) of the healthcare sector. The result shows that HCE had a positive and significant effect on Share Price with P-Value of 0.0081. SCE and CEE with P- Value of 0.2649 and 0.5715 respectively is significantly related to share price in the healthcare sector in Nigeria.

**Decision:** The P-Value of 0.0081 for HCE is less than 0.05 and therefore the Ho is rejected while Hi is accepted. For SCE and CEE with P-value of 0.2649 and 0.5715 which is more than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for SCE and CEE respectively.

The findings indicates that any increase in HCE will lead to a significant increase in the SP of the firms in the healthcare sector in Nigeria. Increase in CEE and SCE will cause insignificant decrease in Share Price in that sector.

Table 4.7(Panel B) presents the regression result between IC and share price in the ICT sector. The result indicate that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively will lead to an increase of 0.047328, -0.098367 and -0.013441 respectively in SP in the ICT sector. This relationship is represented by the equation:

$SP_{it} = 2.389360 + 0.047328 - 0.098367 - 0.013441$

Analysis also reveal that the cumulative effect of IC on the ICT of sector. The result shows that HCE had a positive and insignificant influence on SP in the sector with a p-value of $x_{1=}0.1528$. SCE and CEE caused a negative and insignificant change in the SP with P- Value of 0.2817 and 0.9053.

**Decision:** The P-Value of $x_{1=}0.1528$(HCE), $x_2 = 0.2817$(SCE) and $x_3 = 0.9053$(CEE) respectively are greater than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for all the explanatory variables.

The implication of these findings is that any increase in HCE will lead to an insignificant increase in the SP of the firms in the ICT industry. Increases in SCE and CEE will trigger an insignificant decrease in Share Price of firms in the ICT sector in Nigeria.

Table 4.7(Panel C) shows outcome of regression analysis between IC and Share Price in the Oil and Gas Sector in Nigeria. Results show that a unit/one naira change in the Intellectual

Capital{HC,SC and CE}respectively will lead to a decrease of 8.28854, an increase of 76.50005 and increase of 75.94655 respectively in SP in Oil and Gas Sector. This relationship is represented thus:

$SP_{it}$ = 27.83781-8.288547 +76.50005+75.94655

Table 4.7(Panel C) shows that variations in HCE can cause a negative and insignificant change in the Share Price of the firms with a p-value of 0.3774. SCE and CEE with p-value of 0.7038 and 0.0000 has a positive and insignificant effect and positive and significant effect on Share Price respectively.

**Decision:** The P-Value of 0.1523: HCE and 0.7038: SCE are more than α-value of 0.05, therefore, null hypothesis is accepted while alternate hypothesis is rejected for HCE and SCE respectively. Again, CEE, $x_3$= 0.0000 is less than α-value of 0.05, and null hypothesis is rejected while alternate hypothesis is accepted.

The findings (HCE and SCE) supports the hypothesis that IC does not have any significant effect on SP. However, the outcome for CEE does not support such hypothesis.

Table 4.7(Panel D) presents the regression result between IC and share price in the Food and Beverage Consumables(P/HC). The result shows that a unit/one naira change in the Intellectual Capital {HC,SC and CE}respectively will lead to an increase of 305.2802, a decrease of 222.9452 and a decrease of 5.706745 respectively in food and beverages sector. Substuting the values in Model 6 this relationship can be represented in the following equation:

$SP_{it}$ = -444.8385+ 305.2802 -222.9452 -5.706745.

Table 4.7(Panel D) The result shows that HCE at 0.05 significance level with a P-Value of 0.0003 has a positive and statistically significant effect on SP. Hoewever, SCE and CEE with P-Value of 0.2053 and 0.9125 have statistically insignificant effect on SP with P-Values respectively on share price in the Food and Beverage industry.

**Decision:** Reject Ho and accept Hi since P-Value, 0.0003<0.05 at 5% level of significance for Human Capital. Accept Ho and reject Hi since P-Value $x_{2=}0.2053>0.05$ for SCE and $x_{2=}0.9128>0.05$ at 5% level of significance for Capital Employed respectively.

The findings is that any increase in HCE will lead to an increase while any additional investments in IC (SCE and CEE) will decrease Share Price of firms in the Food and Beverage industry in Nigeria. The results SCE and CEE supports the hypothesis that IC has no significant influence on the SP. Again, the findings from the HCE do not support the hypothesis.

Table 4.7(Panel E) shows the regression result between IC and Share Price(SP) in the Personal and Household Consumables(P/HC). The result shows that a unit/one naira change in the Intellectual Capital {HC, SC and CE} respectively will cause a decrease of -7.678646, an increase of 31.82429 and 6.015350 respectively in Share price in the Personal/Household Consumable sector. This relationship is represented by the equation below:

$$SP_{it} = 15.84642 - 7.678646 + 31.82429 + 6.015350$$

Table 4.7(Panel E) The result SCE and CEE in the industry can lead to a positive and significant influence at 0.05 level with a p-value of 0.5539 ;0.2667 respectively. The relationship between HCE can cause a negative and insignificant decrease at 0.05 level with a p-value of 0.3515.

**Decision:** The P-Value of $x_{1=}0.3515$, $x_{2=}0.5539$ and $x_{3=}0.2667$ is more than α-value of 0.05, null hypothesis is accepted while alternate hypothesis is rejected for HC and Structural Capital and Capital Employed.

The findings therefore show that any increase in HC will lead to an insignificant decrease in the Share Price, SCE and CEE will lead to an insignificant increase in the Share Price of the firms in the Personal/Household Consumables Sector in Nigeria.

Table 4.7(Panel F)  shows that a unit/one naira change in the explanatory variables,IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively  will lead to an increase of  37.44913, decrease of  25.21416 and  decrease of 16.13675 respectively in Share Prices in  brewery sector. This relationship is thus represented in the equation below:

$$SP_{it} = -42.57255 + 37.44913 - 25.21416 - 16.13675$$

Result  further reveals  that change in  HCE is  significant at 0.05 level with a p-value of $x_{1=}0.0006$ (HC); SC and CE have insignificant relationship with SP with P-Value of  $x_2 = 0.5160$ (SC)  and $x_3 = 0.4515$ (CE) respectively.

**Decision:** The P-Value of  0.0006 (HCE) is less than α-value of 0.05: $x_2 = 0.5160$ (SCE)  and $x_3 = 0.4515$ (CEE)  respectively are greater than α-value of 0.05. The null hypothesis is rejected while alternate hypothesis is accepted for HCE. Null hypothesis is accepted and alternate rejected for SCE and CEE.  We therefore conclude  that HCE  can negatively and significantly influence  SP while  SCE and CEE  will positively and insignificantly affect the  SP in brewery sector in Nigeria.

The findings from HCE does not support the hypothesis that IC do not have significant effect on SP. However, the findings from SCE and CEE support the hypothesis that IC have significant effect on SP.

Table 4.7(Panel G) presents the regression result  between IC and Share Price in the conglomerates sector. The result shows  that a unit/one naira change in the explanatory variables, IC{Human Capital(HC), Structural Capital(SC) and Capital Employed(CE)}respectively  will lead to a decrease of  9.862790, decrease of 19.85566  and increase of 78.93413 respectively in SP in the conglomerate sector. This relationship is represented by the equation:

$$SP_{it} = -31.62693 + 9.862790 + 19.85566 + 78.93413$$

Table 4.6 reveals the cumulative effect of IC on the Conglomerate sector with result showing that HCE has a positive and significant impact on SP at 0.05 level of significance with a P-Value of 0.0186. SCE has a negative and insignificant effect on SP with P-Value of 0.3908. CEE also has a positive and significant influence on SP with P-value of 0.0008 at 5% level of significance.

**Decision:** The P-Value HCE and CEE is 0.0186 and 0.0008 respectively and > than α-value of 0.05. Thus the null hypothesis is rejected while alternate hypothesis is accepted HCE and CEE.

However, SCE with P-Value of 0.3908 is > 0.05 and therefore null hypothesis is accepted while the alternative is rejected.

The findings indicates that any increase in HCE and CEE will lead to an increase in the SP of the firms in the Conglomerates industry while increases in SCE will cause decrease in Share Price. The result shows for HCE and CEE do not support the hypothesis that IC does not significantly affect Share Price of firms while the observation in using the explanatory variable SCE supports the hypothesis.

**4.7 Test of Hypotheses using the Pooled Data**

Intellectual capital and the dependent variables{P/E Ratio; M/BV;EPS;NAPS; GRPS and SP}

**Decision Rule:**

1. Reject Ho if the P-Value cal < 0.05 at 5% level of significance.

2. Otherwise accept the null hypothesis (Ho).

* Data for the test of the hypotheses were derived from Appendix 2 through 8.

Regression results showing the effect of Intellectual Capital on corporate valuation indices(Composite Result), thus:

**Table 4.8  Regression Results Showing the Effect of Intellectual Capital and Corporate Valuation  of Firms in Nigeria**

| Indices | Coefficient | t-statistics | P-Value | $R^2$ Adj | Durbin Watson |
|---|---|---|---|---|---|
| **P/E  Ratio** | | | | | |
| (Constant) | 8.525769 | 1.096440 | 0.2769 | | |
| HCE | -0.042034 | -0.013722 | 0.9891 | | |
| SCE | 11.07855 | 1.048734 | 0.2981 | | |
| CEE | 4.830353 | 1.443056 | 0.1537 | | |
| $R^2$ Adjusted | | | .048 | | |
| **M/BV** | | | | | |
| (Constant) | 4.158202 | -0.729238 | 0.2313 | | |
| HCE | 2.714133 | 1.208231 | 0.3792 | | |
| SCE | -6.857940 | -0.885296 | 0.6515 | | |
| CEE | 1.113886 | 0.453793 | 0.4684 | | |
| $R^2$ Adjusted | | | 0.017 | | |
| **EPS** | | | | | |
| (Constant) | 3.702001 | 6.664318 | 0.0000 | | |
| HCE | 1.773791 | 8.105437 | 0.0000* | | |
| SCE | -0.932761 | -1.236006 | 0.2208 | | |
| CEE | 0.286757 | 1.199183 | 0.2347 | | |
| $R^2$ Adjusted | | | 0.6294 | | |
| | | | | | |
| **NAPS** | | | | | |
| (Constant) | -6.226637 | 1.496353 | 0.0001 | | |
| HCE | 4.251110 | 7.211462 | 0.0000* | | |
| SCE | -2.655319 | -1.306213 | 0.1960 | | |
| CEE | 0.128117 | 0.198896 | 0.8430 | | |
| $R^2$ Adjusted | | | 0.5424 | | |
| | | | | | |
| **GRPS** | | | | | |
| (Constant) | 12.32426 | -3.438213 | 0.0010 | | |
| HCE | 11.92112 | 8.441979 | 0.0000* | | |
| SCE | -13.68118 | -2.809485 | 0.0065* | | |
| CEE | -0.255683 | -0.165701 | 0.8689 | | |
| $R^2$ Adjusted | | | 0.5655 | | |
| | | | | | |
| **SHARE PRICE** | | | | | |
| (Constant) | -56.50422 | -4.931793 | 0.0000 | | |
| HCE | 37.68974 | 8.350299 | 0.0000* | | |
| SCE | -43.47451 | -2.793121 | 0.0068* | | |
| CEE | -0.878971 | -0.178218 | 0.8591 | | |

**Source:** Researcher's Computations using E-Views 8.0 Software, 2015; * significant at 5% level of significance
**Where:** SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency,  CEE= Capital Employed Efficiency and PH/C= Personal/ Household Consumables.

Table 4.8 presents the regression result on the pooled data of  Intellectual Capital and  corporate

valuation indices of firms in Nigeria studied. The proxies for IC are Human Capital Efficiency

(HCE), Structural Capital Efficiency(SCE)  and Capital Employed Efficiency(CEE). The indices for corporate valuation of firms are Price/Earnings(P/E) Ratio, Market to Book Value(M/BV Ratio), Earnings per Share(EPS), Gross Revenue per Share(GRPS), Net Assets per Share(NAPS), Gross Revenue per Share(GRPS) and Share Price(SP).

**4.7.1 Test of Hypothesis One(Pooled Data):**

$H_{01}$: Intellectual Capital has no significant effect on P/E Ratio of firms

**4.7.1.1 Effect of Intellectual Capital(IC)  on P/E Ratio of Firms**:

Table  4.8   presents the multiple regression result of the ananlysis. The result indicates that a unit/one naira change in the explanatory variables{Intellectual Capital as explained by  Human Capital  Efficiency(HCE),Structural  Capital  Efficiency(SCE)  and  Capital  Employed Efficiency(CEE)} will cause   an decrease of 0.042034, an increase of 11.07855 and another increase of 4.830353 respectively in  P/E Ratio of Firms in Nigeria. When these values are substituted in Model 1 we have the following equation:

$$P/E_{it} = 8.525769 - 0.042034 + 11.07855 + 4.830353$$

Analysis further reveals that $R^2$ adjusted of  0.047512. This implies that only about 5% of the variations in the P/ER could be attributed to IC  while   about 95% could be attributed to other factors capable of influencing changes in P/E in Nigeria. The result shows that a unit of additional naira in investment on IC could only result in 5% change on P/E Ratio component of the sector that were not considered in this study. Result also show a Durbin Watson of 2.157211 indicating the absence of autocorrelation of data.

Table 4.7 further  reveals the comprehensive effect of IC on the P/Earnings Ratio of firms  is negative and insignificant with Human Capital, positive and insignificant with Structural Capital and  Capital Employed  at 5% level of insignificance respectively. Their   p-values are $x_{1=}0.\,0.9891$ ; $x_2 = 0.2981$ and $x_3 = 0.1537$ respectively.

**Decision:** The P-Value of $x_1 = 0.1697$(HCE), $x_2 = 0.3966$(SCE) and $x_3 = 0.1548$(CEE) are greater than α-value of 0.05: therefore $H_o$ is accepted while the alternate hypothesis is rejected in each case.

The above result supports the hypothesis that Intellectual Capital has no significantly effect on P/E Ratio of Firms in Nigeria.

The implication of this finding is that any increase in HCE will lead to a decrease in the P/E Ratio of the firms in Nigeria. However, an increase in SCE and CEE will lead to an increase in P/E Ratio of firms in Nigeria.

**4.7.1.2 Effect of IC on Market/Book Value Ratio of Firms:**

$H_{02}$: Intellectual capital does not significantly affect Market/Book Value Ratio of Firms

Table 4.8 presents the regression result between IC and M/BV of firms studied. The result show that a unit/one naira change in the explanatory variables Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will cause an increase of 2.714133, a decrease of 6.857940 and another increase of 1.113886 respectively in Market/Book Value Ratio of firms in Nigeria. When these values are substituted in Model 2 we have the following equation:

$$M/BV_{it} = 4.158202 + 2.714133 - 6.857940 + 1.113886$$

Analysis also reveals the comprehensive effect of IC on the M/B Value Ratio of firms is positive and insignificant with HCE and CEE. SCE has a negative and insignificant effect on M/BV. Their p-values are 0.2313; 0.3792 and 0.6515 respectively.

**Decision:** The P-Value of are 0.2313; 0.3792 and 0.6515 respectively are greater than α-value of 0.05: therefore $H_o$ is accepted while the alternate hypothesis is rejected in each case..

The implication of this finding is that any increase in Human Capital and Capital Employed will lead to an increase in the MBV Ratio of the firms in Nigeria. However, an increase in Structural Capital will lead to cause a decrease in M/BV Ratio of firms in Nigeria.

These results however  support the hypothesis that Intellectual capital does  not significantly affect Market/Book Value of Firms in Nigeria.

**4.7.1.3 Intellectual Capital  and Earnings per Share Ratio of Firms**:

Table  4.8  also  shows  the regression result between Intellectual Capital and Earnings per Share using the pooled data from all the firms studied. Analysis show tha  a unit/one naira change in the explanatory variables Intellectual Capital as explained by  Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will cause an increase of 1.773791, a decrease of 0.932761 and another increase of 0.286757 respectively in  Earnings per Share of firms in Nigeria. When these values are substituted in Model 3 thus:

$EPS_{it}$ = 3.702001+ 1.773791-0.932761+0.286757

Analysis also reveals the comprehensive effect of IC on the EPS of firms to be positive and significant with Human Capital, and CEE while it is negative  and insignificant with Structural Capital. CEE has a positive and insigficant effect on EPS  at 5% level of significance.  Their   p-values are 0. 0000 ;  0.2208 and 0.2347 respectively.

**Decision:** The P-Value of  0.0000  is less than 0.05,  therefore the Ho is rejected while alteranate hypothesis  is accepted for HCE. However, for SCE and CEE with P–value of 0.2208 and 0.2347 respectively are greater than 0.05 and as such Ho is accepted and alternate hypothesis is rejected. This implies that any increase in HCE  and CEE will significantly  increase the  EPS while an increase in SCE will cause a decrease in EPS of firms in Nigeria. The result  for SCE  supports the hypothesis that IC does not significantly affect EPS of firms in Nigeria. However, the outcome for HCE and CEE do not support the hypothesis that IC does not significantly affect EPS of firms in Nigeria.

The result also show an  adjusted coefficient of determination of  0.54. This  indicates that the variations in the EPS of firms  is only explained by IC  to the tune of 54%. This means that changes

in EPS can only be attributed to 54% variation in IC indices while the remaining 46% is attributable to other socio-economic factors capable of affecting EPS which are not considered in this study. Result also show Durbin Watson of 1.009876 indicating the absence of autocorrelation of data.

**4.7.1.4 Effect of IC on Net Assets per Share of Firms in Nigeria**:

Table 4.7 presents the regression result between Intellectual Capital and Net Assets per Share using the pooled data from all the firms studied. Result indicates that a unit/one naira change in the explanatory variables Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will cause an increase of 4.251110, a decrease of 2.655319 and another increase of 0.128117 respectively in Net Assets per Share of firms in Nigeria. When these values are substituted in Model 4 we have the following equation:

$$NAPS_{it} = -6.226637 + 4.251110 - 2.655319 + 0.128117$$

Analysis also reveals the effect of IC on the NAPS of firms is positive and significant with Human Capital. It is negative and insignificant with Structural Capital. CEE has a positive and insigficant effect on NAPS. Their p-values are $x_1 = 0.0000$ ; $x_2 = 0.1960$ and $x_3 = 0.8430$ respectively.

**Decision:** The P-Value of HCE is 0.0000 is less than 0.05 therefore the Ho is rejected while alternate hypothesis is accepted. However, for structural capital and capital employed p –value of $x_2 = 0.1960$ and $x_3 = 0.8430$ respectively are greater than 0.05 and as such Ho is accepted and alternate hypothesis is rejected. This implies that any increase in HCE and CEE will trigger an increase in NAPS while any increase in structural capital will cause a decrease in NAPS of firms in Nigeria.

The result also show an adjusted coefficient of determination of 0.54. This indicates that the variations in the NAPS of firms is only explained by IC to the tune of 54%. This means that the positive impact observe can only be attributed to 54% variation in IC indices while the remaining

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46% is attributable to other socio-economic factors capable of affecting NAPS which are not considered in this study. Result also show Durbin Watson of 0.927080 indicating the absence of autocorrelation of data.

**4.7.1.5 Effect of IC on Gross Revenue per Share Ratio of Firms in Nigeria**:

Table 4.8 also shows that a unit/one naira change in the explanatory variables Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will cause an increase of 11.92112, a decrease of 13.68118 and another decrease of 0.255683 respectively in Gross Revenue per Share(GRPS) of firms in Nigeria. When these values are substituted in Model 5 we have the following equation:

$GRPS_{it}$ = -12.23426 + 11.92112- 13.68118 -0.255683

In view of this, the relationship between the GRPS of the firms and Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) is positive with Human Capital, negative with Structural Capital and negative with Capital Employed respectively.

Analysis further reveals the effect of IC on the GRPS of firms is positive and significant with Human Capital, while it is negative and significant with Structural Capital and is negative and insigficant with Capital Employed at 5% level of insignificance respectively. Their p-values are $x_1$=0. 0000 ; $x_2$= 0.0065 and $x_3$=0.8689 respectively.

**Decision:** The P-Value of $x_1$=0. 0000 and $x_2$= 0.0065 is less than 0.05, therefore the H0 is rejected while alteranate hypothesis is accepted for Human Capital and Structural Capital. However, for capital employed with p –value of 0.8430 respectively which is greater than 0.05 and as such Ho is accepted and alternate hypothesis is rejected. This implies that any increase in HC will lead to an increase in GRPS while any increase in structural capital and capital employed will cause a decrease in GRPS amomg firms in Nigeria.

The result also show an adjusted coefficient of determination of 0.57. This indicates that the variations in the P/E ratio of firms is only explained by IC to the tune of 57%. This means that the positive impact observe can only be attributed to 57% variation in IC indices while the remaining 43% is attributable to other socio-economic factors capable of affecting GRPS which are not considered in this study. Result also show Durbin Watson of 0.713070 indicating the absence of autocorrelation of data.

**4.7.1.6 Effect of Intellectual Capital on the Share Price of Firms in Nigeria**:

Table 4.8 also shows that a unit/one naira change in the explanatory variables Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency(SCE) and Capital Employed Efficiency(CEE) will cause an increase of 37.68974, a decrease of 43.47451 and another decrease of 0.878971 respectively in Share Price(SP) of firms in Nigeria. When these values are substituted in Model 6 we have the following equation:

$$SP_{it} = -56.50422 + 37.68974 - 43.47451 - 0.878971$$

In view of this, the relationship between the SP of the firms and Intellectual Capital as explained by Human Capital Efficiency(HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) is positive with Human Capital, negative with Structural Capital and negative with Capital Employed respectively.

Analysis also indicate that the effect of IC on the SP of firms is positive and significant with Human Capital, while it is negative and significant with Structural Capital and is negative and insigficant with Capital Employed at 5% level of insignificance respectively. Their p-values are $x_1 = 0.0000$; $x_2 = 0.0068$ and $x_3 = 0.8591$ respectively.

**Decision:** The P-Value of $x_1 = 0.0000$ and $x_2 = 0.0068$ is less than 0.05, therefore the Ho is rejected while alteranate hypothesis is accepted for Human Capital and Structural Capital. However, for capital employed with p –value of 0.8591 respectively which is greater than 0.05 and as such Ho is accepted and alternate hypothesis is rejected. This implies that any increase in HC will lead to an

increase in SP while any increase in structural capital and capital employed will cause a decrease in SP amomg firms in Nigeria.

The result also show an adjusted coefficient of determination of 0.56. This indicates that the variations in the P/E ratio of firms is only explained by IC to the tune of 56%. This means that the positive impact observe can only be attributed to 56% variation in IC indices while the remaining 44% is attributable to other socio-economic factors capable of affecting GRPS which are not considered in this study. Result also show Durbin Watson of 0.669936 indicating the absence of autocorrelation of data.

**4.8 Discussion of Findings:** This study appraised the effects of Intellectual Capital on the corporate valuations of selected quoted firms in Nigeria. The analyses has also quite revealing. However, the major finding will be discussed in consonance with the six subheadings namely: Intellectual Capital and Intellectual Capital and Price Earnings Ratio {P/E Ratio};Intellectual Capital and Market to Book Ratio; Intellectual Capital and Earnings per Share; Intellectual Capital and Net Asset per Share; Intellectual Capital and Gross Revenue per Share and Intellectual Capital and Share Price.

**4.8.1 Effect of Intellectual Capital {HCE, SCE and CEE} on Price Earnings Ratio {P/E Ratio}**

Table 4.8 Result of the analysis indicate that Human Capital Efficiency(HCE) had a negative and insignificant effect on Price-Earnings Ratio. Again, SCE and CEE had a positive and insignificant effect on P/E Ratio. Therefore Ho was accepted in all the explanatory variables while Hi was rejected.

The results means that the Intellectual Capital index that exerted the greatest positive and insignificant effect on P/E ratio is the Capital Employed Efficiency(CEE) with $b_0$= 4.830353; P-Value of 0.1537 followed by SCE with $b_0$= 11.07855; P-Value of 0.2981 and lastly the HCE $b_0$= -0.042034; P-Value of 0.9891. The result means that all the IC indices positively and insignificantly

affected the P/ER except HCE which had a negative and insignificant effect on P/E Ratio. This above findings on SCE and CEE is supported by the submission of Djamil, et al.(2013) who postulate that companies that invest in Research and Development are usually considered to have potentials for sustainabilityand informed investors are usually disposed to pay for intellectual capital premium that is well defined by firms' P/E Ratio. It mens also that firms could boost their P/E Ratio by investing mostly on the Capital Employed of the firms and Structural Capital and devicing better strategies to get the Human Capital to support value creation.

This result supports the views of previous scholars (Besharati, et.al., 2012; Wang, 2011; Maditionis, et.al. 2011; Okpala & Odogwu, 2010) who submitted that there is a positive and insignificant relationship between IC and market value, prices and earnings. Our finds contradics the views of other scholars (Rafei et.al. 2012, Rahman, 2012, Clark, et.al. 2012, Salman & Mahamad(2012) who posit that IC is positively and significantly related with market values(share prices) and earnings.

This result is not unexpected in Nigeria where most of the firm valuation methodologies adopted are heavily based on the conventional accounting that heavily recognize tangible assets to the detriment of intellectual capital.

### 4.8.2 Effect of Intellectual Capital on Market to Book Value Ratio of Firms in Nigeria

Table 4.8 indicates that Intellectual Capital{HCE and CEE} had a positive and insignificant effect on Market to Book Value Ratio respectively. Again, the SCE had a negative and insignificant effect on M/BV. In the light of these results, Ho was accepted for the explanatory variables. This result supports the findings of authors such as Banimahd, et al(2012) who in a study using firms quoted in Tehran Stock Exchange; Maditionis, et al. (2011) in a study using firms quoted in Ekwe (2012) using banks quoted in Nigeria submitted that intellectual capital had a positive and insignificant effect on M/BV. These findings can be attributed to the discrepancy that exist between the book value and market value of firm which can only be closed by firms adopting the

Intellectual Capital Accounting along side the conventional accounting. Berzkalne & Zelgalve, (2014) and Boda & Slavik(2012) submit that intellectual capital has been identified to have the capacity of filling the crucial gap that exists between companys' book values and market values.

This result is supported by Maditionis, et al.(2011) and Puntilo (2009) whose studies suggest that there is positive and insignificant between IC and M/BV. This result however contradicts that of Pouraghjan, et.al. (2013); Firer & Stainbank(2003) studied firms in South Africa submitted that IC is positively and significantly related to Market to Book Value. SCE had a negative and insignificant effect on M/BV Ratio.

**4.8.3 Effect of Intellectual Capital on Earnings per Share(EPS) of firms in Nigeria:** Table 4.8 indicates that IC {HCE} had a positive and significant effect on the EPS of firms and for this Ho was rejected and Hi was accepted.

The findings support the earlier views of Namazi & Ebrahims(2009) in Anuonye, 2015, Asadi(2012), Flamhotz(1999), Rahman(2012), Ekwe(2012) who were of the view that there is IC contribute positively to financial performance and value of companies. It however is opposed to earlier views of (Anuonye, 2015 and Beshanrati, et.al.,2012) whose studies submitted that the effect of IC on EPS was not statistically significant. The reason for this anomaly may be traced to the lack of incorporation of all the components of Intellectual capital in appreciating the actual earnings of firms. According to scholars such as (Vafei, et al. 2011; Banimahd,etal.,2012) companies unarguably require reliable, accurate and adequate measure of firms' valuation which can incorporate all the components of IC and efficiently demonstrate its true impact on companys' values.

These findings may not be unconnected to financial reporting system in Nigeria which has not fully integrated the intellectual capital accounting into the financial reporting platform.

The result also reveals that both SCE had a negative and insignificant effect on EPS. The Ho was therefore accepted and Hi was rejected. This result supports the view of scholars like

Anuonye(2015) and Beshanrati et.al.(2012) whose studies submitted that the effect of IC on EPS was not statistically significant. Our study do not support the view of {(Namazi & Ebrahims, 2009 in Anuonye,2015, Asadi,2013; Rahman, 2012; Ekwe,2012)} who are of the view that IC contributes positively to financial performance and values of companies.

Results further indicates that CEE has positive and insignificant effect on EPS. Ho was therefore accepted and Hi was rejected The above result supports previous view of scholars such Darabi,et.al. (2012) and Sofian, et.al; Henry(2013); Abdulai, et.al.(2012), Pulic(2000) and Javonick, et.al.(2012) whose studies suggest that IC is there is positive and significant relationship between IC and EPS. Our findings however contradicts the views of scholars like Anuonye(2015) and Beshanrati et.al.(2012) whose studies submitted that the effect of IC on EPS was not statistically significant.

**4.8.4 Effect of Intellectual Capital on Net Assets per Share Value of Firms:** In Table 4.8 results indicates that, HCE had a positive and significant effect on NAPS, for this Ho was rejected and Hi accepted. This result is in consonance with earlier studies of scholars such as {Namazi and Ebrahims2009 in Anuonye, 2015; Asadi(2013); Rahman, 2012, Henry,2013) who are of the view that there is IC contribute positively to financial performance and value of companies.

The result however contradicts the views of previous scholars such as Anuonye(2015) and Beshanrati et.al.(2012) whose studies submitted that the effect of IC on firms' value was not statistically significant.

Results further reveals that the effect of SCE on NAPS is negative and insignificant. This result contradicts previous view of scholars such as Brymer,et.al.(2014), Henry(2013); Abdulai, et.al.(2012), Pulic(1998) and Javonick, et al. (2012) whose studies suggest that IC is has a positive and significant relationship between IC and firm's value. Analysis also show that CEE had a positive and insignificant effect on NAPS. Our study do not support the view of {Namazi & Ebrahims, 2009 in Anuonye, 2015, Asadi,2013; Rahman, 2012; Ekwe,2012)} who are of the view that there is IC contribute positively to financial performance and value of companies. This result supports the view of scholars like Anuonye(2015) and Beshanrati, et.al.(2012) whose studies submitted that the effect of IC on EPS was not statistically significant.

The discrepancies in the results may be attributed to the use of conventional accounting in firm valuation to the total disregard of the intangible assets which drives most firm value creation. According to Chen,et al.(2005), the limitations in conventionally financial statement in precisely

expliaining firms' values reveals the fact that these days the source of economic value is in the creation of intellectual capital and no longer the financial or physical assets.

**4.8.5 Effect of Intellectual Capital on Gross Revenue per Share:** In Table 4.8 results on the test of hypothesis 5 indicates that, HCE had a positive and significant effect on NAPS, for this Ho was rejected and Hi accepted. Result also show that SCE had negative and significant effect on GRPS, for this Ho was accepted and Hi rejected. This view is in line with the view of Maditionis, et al.(2011) who avers that IC is negatively and significantly related with market value indices. CEE had a negative and insignificant effect on CEE. Ho was accepted and Hi rejected.

The result for HCE and GRPS is supported by findings of previous scholars namely {Namazi & Ebrahims, 2009 in Anuonye, 2015, Asadi(2013); Rahman, 2012; Ekwe,2012)} who are of the view that IC contribute positively to financial performance and value of companies. The findings is opposed to the views of Besharati, (2012) who is of the view that IC positively but insignificantly effect corporate valuation indices. Result on the effect of CEE on GRPS is negative and insignificant. This is in consonance with Banimadh, et.al( 2012) and Ekwe(2012) but opposed to authors such as {(Namazi and Ebrahims(2009), Asadi(2013), Rahman,2012, Henry,2013)} who are of the view that IC contribute positively to financial performance and value of companies. That the relationships are insignificant could be traced to financial reporting that has not incorporated in full the intangible assets that can enhance revenue growth and sustainability in Nigeria. Firms with complex intangibles are gradually making accounting numbers less useful and therefore imperative for integration of Intellectual Capital in valuing firms(Vafei & Zelgalve, 2014; Ahangar, 2011) and hence needed to reflect the true impact IC has on firms' revenue.

The findings on the effect of CEE This view is against widely held views and in consonance with submission of Maditionis, et al.(2011) who avers that IC is negatively and significantly related with market value indices. It therefore contradicts the views of scholars such as {Vafei & Zelgalve, 2014; Ahangar, 2011; Djhamil,2013 and Pulic,1998} that IC affect sales revenue positively and significantly.

**4.8.6 Effect of Intellectual Capital on Firms' Share Price of Firms:** In Table 4.8, the results on the test of hypothesis 6 indicates that, HCE had a positive and significant effect on NAPS. For this,

Ho was rejected and Hi accepted. This result is in line with widely held views and supports the earlier assertion of {Okpala & Odogwu, 2010; Henry, 2013; Rahman, 2012; Djhamil, et al. 2013) that IC positively and significantly affect share price.

Results further show that SCE had a negative and significant effect on SP and that CEE had a negative and insignificant effect on SP. This view is against widely held views and in consonance with submission of Maditionis, et al.(2011) who avers that IC is negatively and significantly related with market value indices. It therefore contradicts the views of scholars such as {Vafei & Zelgalve, 2014; Ahangar, 2011; Djhamil,2013, Ekwe,2012 and Pulic,1998} that IC components affect SP positively and significantly.

The above contradictions to widely held view can be attributed to the treatment accorded the intangible assets in accounting reports. Most of the intangible expenses are written of in the year in which they are incurred and therefore undervalue the stock price. Many blue chip companies with high stock value are known to have very little investment in intangible compared to intellectual investment and not properly valuing them will definitely undervalue the stock price(Ngari, et al., 2013; Uadiale & Uwuigbe, 2012).

# CHAPTER FIVE

## SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

### 5.1 Introduction

This study investigated the effect of Intelletual Capital on the corporate valuation of selected quoted firms in Nigeria. This chapter presents the study's summary of findings, conclusion and recommendations among others.

### 5.2 Summary of Findings

(1) Intellectual Capital has insignificant effect on Price-Earnings(P/E) Ratio of firms in Nigeria.

(2) Intellectual Capital has insignificant effect on Market to Book Value(M/BV) Ratio of firms in Nigeria.

(3) Intellectual Capital has significant effect on Earnings per Share(EPS) of firms in Nigeria.

(4) The effect of intellectual capital on Net Assets per Value Ratio(NAPS) is significant on firms in Nigeria.

(5) Intellectual Capital has significant effect on Gross Revenue per Share(GRPS) of firms in Nigeria.

(6) Intellectual Capital has significant effect on Share Price(SP) of firms in Nigeria.

**Other findngs of the study are:** The following findings emanates from the cross-sectional analysis:

1. HCE has a positive and insignificant effect on P/E Ratio in the Healthcare and ICT sectors. HCE has a negative and insignificant effect on P/E Ratio in the Oil and Gas, P/HC, Brewery and Conglomerates sectors. HCE has a positive and significant effect on P/E Ratio in Food and Beverage sectors. SCE has a negative and insignificant effect on P/E Ratio in the

Healthcare, positive and insignificant in ICT, Oil and Gas, Food and Beverage, Personal and Household Consumables(P/HC), Brewery and Conglomerates sectors in Nigeria. CEE however has a positive and significant effect on P/E Ratio in P/HC. CEE has a positive and insignificant effect on the P/E Ratio in Healthcare, Oil and Gas, Brewery and the Conglomerates. CEE however has a negative and insignificant effect on P/E in the ICT and Food and Beverage sectors.

2.  HCE has a negative and insignificant effect on M/BV Ratio in Healthcare, Food and Beverage sector. HCE has a negative and significant effect on the M/BV of the ICT, Oil and Gas. HCE has a positive and insignificant influence on M/BV in P/HC, Brewery and Conglomerates. SCE has a negative and insignificant effect on M/BV Ratio{Healthcare, Food and Beverage, P/HC, Brewery and Conglomerates}. SCE has a positive and insignificant influence on{ICT, Oil and Gas sectors} in Nigeria.

    CEE has a negative and significant effect on M/BV Ratio in healthcare sector. CEE has a positive and insignificant effect on M/BV Ratio {ICT industry and Brewery}. CEE also has a positive and significant effect on M/BV{Oil and Gas, Food/Beverage sector, P/HC and Conglomerates}.

3.  HCE has a positive and insignificant influence on Earnings per Share(EPS) in the Healthcare, ICT, Oil and Gas industry. HCE has a positive and significant effect on EPS in Food and Beverage, Brewery. HCE has a negative and insignificant effect on SCE and EPS in {ICT, Food and Beverage, P/HC, Brewery} sectors in Nigeria. SCE has a negative and significant influence EPS in the Healthcare and Oil/ Gas. SCE has a positive and insignificant effect on EPS in the Conglomerates sector. CEE has a positive and insignificant influence on EPS {Healthcare, ICT, Oil and Gas, Food and Beverage} sectors in Nigeria. CEE has a negative and insignificant effect on EPS in the PH/C, Brewery and Conglomerates.

4.      HCE has a positive and insignificant effect on Net Asset per Share(NAPS) in the Healthcare, Oil and Gas, Conglomerates sector but has a positive and significant effect on Food and Beverage, ICT and Brewery. The effect of HCE on NAPS  is negative  and insignificant in P/HC.  SCE has a positive and insignificant effect on NAPS is in the Healthcare,ICT, Food and Beverage, P/HC, Conglomerates. It effect NAPS is negative and insignificant  in Oil/ Gas and Brewery.  CEE has a positive and insignificant effect on NAPS Ratio in healthcare, ICT. The effect of CEE on P/E Ratio is positive and insignificant in ICT and  brewery. The effect is  however negative and significant in  the  Oil and Gas, P/HC. CEE has a positive and significant  effect on NAPS in conglomerates. The effect is negative and insignificant in the Food/Beverage.

5.      HCE has a positive and insignificant effect on the Gross Revenue per Share(GRPS)  in the Healthcare, ICT,Oil and Gas, P/HC, Brewery and Conglomerates. However, the effect is positive and significant in the  Food and Beverage. SCE has a  GRPS is negative and insignificant in the Healthcare,  Oil and Gas, Food and Beverage, Brewery and Conglomerates. SCE has a  positive and insignificant  effect in the  ICT, P/HC sectors  in Nigeria. CEE has a positive and insignificant effect on GRPS in healthcare, ICT, Food and Beverage. CEE has a negative and significant effect on Oil and Gas and Brewery. The effect is  however positive and significant between the variables in the  Conglomerates sector.

6.       HCE has a positive and significant  influence on the Share Price(SP) in the Healthcare, Brewery, Conglomerates.  HCE has a negative and insignificant effect on  SP in the  Oil and Gas sector. HCE has a  positive and significant effect on SP in the  Food and Beverage industry. The effect of  SCE on SP is negative  and insignificant in ICT, Brewery, Healthcare, Food and Beverage and Conglomerates.  SCE has a positive and insignificant effect on  SP in  the  Oil and Gas, P/HC. CEE has a negative  and insignificant effect on SP

in Healthcare, ICT.  CEE has a positive and significant effect on  SP  in Oil and Gas, Food and Beverage sector, brewery and conglomerates. CEE however has a positive and insignificant effect on Share Price in  the  P/HC.

## 5.2 Implications of  Findings

The  implications of these findings are as follows:

1. Human Capital has positive and significant effect on four out of the five corporate valuation indices studied. These indices are EPS,NAPS,GRPS and SP. This result implies that firms who wish to enhance these indices of valuation must make deliberate efforts in increasing investment in recruiting, training and motivating a virile  work force that could support growth in this direction.

2. Results which shows that Structural Capital negatively and insignificantly affects five indices of corporate valuation namely M/BV Ratio, EPS,NAPS,GRPS and SP. This findings means any increase in investments in the SCE will lead to a decrease in those valuation indices. As such firms  should reduce investment in SC or re-strategized upon modalities of SC management to enable it support  enhanced   values creation.

3. On Capital Employed, results show that it has positive and insignificant effect four out of the six dependent variables namely P/E Ratio, M/BV, EPS and NAPS. It implies that firms who wish to enhance these valuation indices must increase their investment on Capital Employed . SCE also has a negative and insignificant effect on corporate valuation indices of GRPS and SP.  It means that investment on  capital employed must be reduced if GRPS and SP must be  enhanced.

## 5.3 Conclusion

This study has examined the effects of Intellectual Capital on the corporate valuation of  quoted firms in Nigeria. Multiple Regression analysis were run on the data with the aid of E-View 8.0

Software, 2015.  Sequel to the analysis and findings of this study, the  following  concludes are made:

Human Capital Efficiency(HCE)  has exerted the most significant influence on variables measuring corporate values, followed by Capital Employed  Efficiency and lastly, the Structural Capital Efficiency. Human Capital Efficiency has the most positive influence on variables measuring corporate valuation as it shows a positive and significant association on four(4) out of  the six (6) dependent variable studied namely EPS, NAPS, GRPS and GRPS. The corporate valuations index of EPS has most positively and significantly reacted to  Intellectual capital indices while M/BV Ratio was the least positively and significantly affected. This is evident in its adjusted coefficient of variations. Thus: EPS {Adj. $R^2$ 63%}; GRPS{Adj. $R^2$: 57%}; Share Price{Adj. $R^2$: EPS 56%}; NAPS{Adj. $R^2$: 63%}; P/E Ratio{Adj. $R^2$:4.8%} and M/BV  Ratio{Adj. $R^2$ : -0.017%}. The sectoral analyses shows that the Food and Beverage sector, followed by the Oil and Gas have the highest positive and  association between IC and corporate valuation variables studied. The dependent variables that has the weakest indices  from the effect of IC measuring variables is the M/BV Ratio. That the accounting practice in Nigeria is to a large extent based on conventional accounting. This practice has ignored the bulk of investments in intellectual assets and this has grossly undervalued firms.

### 5.4 Recommendations

**Se**quel to the findings of this study, it is evident that  the potentiality of Intellectual Capital  can only be maximally realized if there is a fair play between the three components as none can effectively function in  isolation. In  the  light  of  this,  the  study  makes  the  following recommendations:

(1)Since, EPS, GRPS and Share Price is found to have very strong correlation; companies must increase  their  tentacles  and  grow  their  market  share  through  employing  capable  sales representatives, train them and provide the  necessary infrastructure to work with.  Again, as

earnings is one foremost driver of corporate value, the necessary IC of Human Capital must be provided while unnecessary costs are eliminated to increase their earnings. Firms should therefore concentrate and embark on expense that could boost the IC components that will positively influence performance and indeed market valuation

(2) Since HCE has been shown to be the key driver of value creation as shown in its effect on EPS, NAPS, GRPS and SP, deliberate efforts should be made to grow IC of firms by first recruiting very competent staff, train and motivate them. Companies must strategically and deliberately train and retain staff for a long time to avoid losing the intellectual assets possessed by them, which could stimulate better Earnings per Share, NAPS, GRPS and even the Share price.

(3) Firms should invest in education and other relevant programmes that can help them increase their structural capital by harnessing information technology and all the needed facilities that could support the human resources and other assets of the firms toward building a virile and sustainable database.

(4) An accounting approach, which recognizes and incorporate intellectual capital in the existing accounting framework, should be put forward by relevant accounting body.

(5) Firms should be compelled to show by way of disclosure their investments in Intellectual capital so that they can be better valued.

(6) The teaching and practice of Intellectual Capital Accounting should be made mandatory and backed by an act of the parliament for institutional and industry practice.

**5.5 Contributions to Knowledge:**

This study has evaluated the effect of intellectual capacity on firms' corporate valuation among quoted firms in Nigeria. The study has made the following contributions:

**Lucy Intellectual Capital Efficiency Guage (LICEG):** The Lucy Intellectual Capital Efficiency Guage is a model adapted from the Pulic VAIC Model. The model has articulated the Intellectual development activities of firms along the three components developed by Pulic(1998) Human

Capital, Structural Capital and Relational Capital. The Guage proposes that when there is well articulated activites aimed at boosting the activities of Intellectual Capital that it will trickle down to significant firms value creation and enhancement as measured by the dependent variables studied in this work namely Price Earnings Ratio, Market to Book Value Ratio, Earnings per Share, Net Asset per Share, Gross Revenue per Share and Share. The Guage therefore has some activities as indicators to show how efficiently the IC of the firms has been deployed. The Guage will therefore serve as a guide for industry drivers, firms' valuation experts, shareholders and other stakeholders who may be seeking to make decisions on firms' value creation potentials in Nigeria. (See page 52 for the Lucy's Intellectual Capital Efficiency Model ).

**Extended Value Added Intellectual Efficiency Model:** This model has adapted the VAIC model of Pulic by incorporating the Relational Capital in calculating the Value Added Efficiency of the components of intellectual capital.

**The study has expanded the bases for firm valuation thus enriching research and the academia:** This study has specifically enlarged the coast on the existing debate/argument on Intellectual Capitals' ability at driving corporate valuation and other related topic. It has done this by providing a multi-faceted approach by considering many variables as dependent against which the explanatory variable was measured.

**Contribution to Economic/Corporate Policy Making:** The study has been able to empirically articulate the impact of IC on the various economic sectors. This approach adopted will make this report a veritable tool that could serve diverse policy makers as they will be to appreciate better the extent to which both their tangible and intangible assets(IC) could drive value creation in their firm.

**To Employers of Labour/ Human Resources Managers:** The industry and sector drivers will find this report very apt as it x-rayed specific industries firms' attitudes(investments) towards IC and the extent it can affect their corporate values. From the study it is imperative that Human Resources is a key driver of values, it will therefore bring to the limelight the value creation

capabilities of human resources. Thus, deliberate strategies should be articulated aimed at enhancing the quality of human resources by adopting strategic hiring, qualitative training and retraining and proper remuneration and other forms of motivation.

**To  Financial Analysts/Corporate Valuations Experts:** This report will also serve as a compass that will serve the purpose of financial analysts and corporate valuers alike  to appreciate the extent that the various components of IC could drive value creation and therefore advise their clients accordingly.

Again, the study shows that effect of structural capital ranked very low in value creation and poorly too. Since the structural capital is about the only intellectual capital component (database, patents, copyright, methodologies and organisational and so on) that is owned by the firm, even after the human capital has left the establishment, it means that this component is highly untapped in Nigeria. This report becomes a wakeup call for industry policy makers to articulate the much needed polices aimed at anchoring the structural capital to drive the key values it is meant to drive.

**Contribution towards facilitating Investment decision making:** This report will serve as a veritable tool for investment decision making since it has brought to the fore, the  extent IC components drive in the various firms across divers sectors of the economy.

**5.6 Suggestions for Further Studies:**

The study wish to propose the following topics for further studies:

i.        A comparative study can be done  between Nigeria   and other countries.

ii.       Further studies can adopt othe research model and tools for analysis apart from those used in this study.

iii.      Other researchers can also elongate the number of years and other indices to measure the effect of intellectual capital on firm's valuation.

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**Appendix 1:**

Background Information of Firms Studied

| S/N | Name of Companies | Head Office Address | Nature of Business | Date of Incorporation | Date Listed on Nigerian Stock Exchange | NSE Classification |
|---|---|---|---|---|---|---|
| 1 | May & Baker Nig. Plc | 3/5 Sapara Street, Ikeja Industrial Estate, Lagos | Manufacturing & Marketing of Pharmaceuticals and Allied Products | 4/9/1944 | 10/11/1944 | Healthcare |
| 2 | GlaxoSmithkline Nig. Plc | GSK House. Km 16, Ikorodu Road, Lagos | Manufacture, Marketing and Distribution of Pharmaceuticals, Oral care and Nutritional Products. | 23/6/1971 | July, 1979 | Healthcare |
| 3 | Evans Medical Plc. | Km. 32, Lagos - Badagry Exp. Way, Agbara Industrial Estate, Ogun State. | Pharmaceutical /Foods Manufacturing | 23/4/1954 | 1979 | Healthcare |
| 4 | Mobil Nig. Plc. | Mobil House, Lekki Express Way, Victoria Island, Lagos | Marketing of Petroleum Products, Manufacturing of Automotive Lubricant | 31/12/1951 | 24/4/1979 | Oil and Gas |
| 5 | Oando Nig. Plc. | Stallion House, Ajose Adegun Street, VI Lagos | Downstream Marketing, Distribution of Petroleum and Natural Gas Products | 25/8/1969 | 27/2/1992 | Oil and Gas |
| 6 | Total Nig. Plc. | Total House 4 Afribank Street, Victoria Island, Lagos | Marketing of Petroleum Products | 1/6/1956 | 20/4/1979 | Oil and Gas |
| 7 | Unilever Nig. Plc. | Number 1, Billingsway ,Oregun, Ikeja, Lagos | Manufacturing and Marketing of Consumer Products | 11/4/1923 | Sept. 1973 | Personal/ Household Products |
| 8 | Vitafoam Nig. Plc | Oba Akran Avenue, Industrial Estate, Lagos. | Manufacturing and Distribution of Polyether, Reconstituted foam, Regid foam, Polyester and Vitabond. | 4/08/1962 | Nov. 1978 | Personal/ Household Products |
| 9 | PZ Cussons Nig. Plc. | 45/47, Town Planning Way, Ilupelu, Ikeja, Lagos | Manufacture and Sale of consumer products | 4/12/1948 | 18/2/1974 | Personal/ Household Products |

**Source: NigeriaGalleria.com. Retrieved 1/11/2015**

**Appendix 1 Contd':**

**Background Information of Firms Studied**

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | Nigerian Breweries Plc | Iganmu House, Abebe Village Road, Iganmu, Lagos | Brewing and Marketing of Lager Stout and Non-Alcoholic Drinks | 16/11/1946 | 5/9/1973 | Breweries |
| 11 | Guinness Nig. Plc. | 24, Oba Akran Avenue, Lagos. | Brewing, Bottling and Marketing of Foreign Extra Stout, Harp Lager and Malta Guinness. | 29/4/1950 | November, 1965 | Breweries |
| 12 | International Breweries Plc. | Omi Asoro, Ilesa, Osun State. | Brewing of Beer and Non-Alcoholic Malt Drinks | 22/12/1971 | 6/4/1995 | Breweries |
| 13 | UAC Nig. Plc. | Niger House, 1/5 Odulami Street , Lagos | Manufacturing, Merchandizing of Agro Products. | 22/4/1931 | 1974 | Conglomerates |
| 14 | A.G Leventis Plc | Iddo House, Iddo, Lagos. | Sales and Servicing of Motor Vehicles, Construction Equipments and Property Management | 22/4/1958 | 29/11/1978 | Conglomerates |
| 15 | Chellarams Plc | 2, Gorliora Street, Off Adeola Odekun Street, V/I, Lagos | Assembly of Motorcycles and Bicycles, Manufacturing of Packaging Materials | 1923 | 18/4/1977 | Conglomerates |
| 16 | Nestle Nig. Plc. | 22/24 Industrial Avenue, Ilupelu, Ikeja, Lagos. | Manufacturing, Marketing of Beverage and Allied Products | 25/11/1961 | 20/4/1979 | Beverages |
| 17 | Nigerian Bottling Coy Plc. | NBC House, Oyingbo, Ebute Metta, Lagos. | Production and Bottling of Alcohol Free Beverages. | 22/11/1951 | 12/11/1973 | Beverages |
| 18 | 7-Up Bottling Coy. | 247, Moshood Abiola Way, Ijora, Lagos. | Bottling and Making of Soft Drinks | 25/6/1959 | 1986 | Beverages |
| 19 | Interlinked Technologies Nig. Plc | Number 1 Ola-Ayeni Street, Lagos | Development, Manufacture, Marketing of Communications Equipments | 17/11/81 | 15/11/1993 | ICT |
| 20 | NCR Nig. Plc | 6, Broad Street Lagos. | Computer Marketing and Manufacture of Communication Equipment and Services | 1949 | 30th May,1979 | ICT |
| 21 | Chams Nig. Plc. | Iddo House,Iddo, Lagos. | Telecommunications & Office Support Services | 1985 | 17th February, 1986 | ICT |

**Source: NigeriaGalleria.com. Retrieved 1/11/2015**

Appendix 2: Operational Variables for the Healthcare Sector

| Variable/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| May& Baker Plc | | | | | | | | | | |
| | 22.27 | 19.38 | 8.652 | 67.15 | 11.97 | 9.783 | 44.77 | 26.67 | 11.47 | 12.30 |
| P/ER | 0.793 | 3.25 | 3.22 | 2.99 | 3.87 | 3.93 | 3.6 | 2.156 | 1.425 | 1.316 |
| M/BV | 3.090 | 3.25 | 3.22 | 2.99 | 3.87 | 3.93 | 3.73 | 3.71 | 3.76 | 3.95 |
| NAPS | -011 | 0.08 | 0.23 | 0.2 | 0.33 | 0.6 | 0.3 | 0.3 | 0.47 | 0.42 |
| EPS | 6.497 | 5.784 | 4.846 | 4.733 | 6.57 | 8.485 | 5.53 | 3.219 | 9.195 | 18.82 |
| GRPS | 2.450 | 1.550 | 1.990 | 3.43 | 3.860 | 5.87 | 13.43 | 8.00 | 5.36 | 5.200 |
| SP | 3.029 | 2.667 | 2.738 | 3.02 | 2.823 | 3.726 | 3.307 | 3.414 | 2.827 | 2.640 |
| HCE | | | | | | | | | | |
| SCE | 0.670 | 0.625 | 0.635 | 0.5 | 0.647 | 0.732 | 0.698 | 0.707 | 0.646 | 0.621 |
| CEE | 0.556 | 0.478 | 0.388 | 0.55 | 0.338 | 0.507 | 0.362 | 0.242 | 0.578 | 0.582 |
| | | | | | | | | | | |
| Glaxo Smithkline | | | | | | | | | | |
| HCE | 3.298 | 3.410 | 3.733 | 3.714 | 3.446 | 3.3575 | 2.695 | 3.041 | 3.411 | 3.470 |
| SCE | 0.697 | 0.767 | 0.732 | 0.731 | 0.709 | 0.706 | 0.629 | 0.671 | 0.709 | 0.718 |
| CEE | 0.610 | 0.662 | 0.645 | 0.679 | 0.639 | 0.659 | 0.524 | 0.672 | 0.665 | 0.833 |
| PER | 22.29 | 15.29 | 9.58 | 9.377 | 12.61 | 10.88 | 27.01 | 131.5 | 11.20 | 8.37 |
| M/BV | 5.271 | 4.045 | 2.444 | 3.171 | 3.262 | 3.937 | 5.01 | 3.972 | 2.822 | 1.92 |
| NAPS | 12.90 | 11.15 | 9.410 | 8.200 | 6.880 | 5.700 | 4.81 | 4.38 | 3.65 | 4.05 |
| EPS | 3.050 | 2.950 | 2.400 | 2.570 | 1.780 | 1.340 | 0.84 | 0.13 | 0.92 | 0.92 |
| GRPS | 30.50 | 26.45 | 22.50 | 17.63 | 15.63 | 13.11 | 10.36 | 10.86 | 10.77 | 8.97 |
| SP | 68.00 | 45.10 | 23.00 | 24.10 | 22.09 | 14.58 | 23.50 | 17.10 | 10.25 | 7.95 |
| | | | | | | | | | | |
| EVANS Plc | | | | | | | | | | |
| HCE | 1.938 | 2.391 | 1.781 | 1.872 | 2.553 | 1.392 | 1.347 | 2.451 | 1.922 | 1.607 |
| SCE | 1.375 | 0.582 | 0.438 | 0.466 | 0.608 | 0.281 | 0.258 | 0.592 | 0.592 | 0.377 |
| CEE | 0.466 | 0.551 | 4.991 | 4.88 | 0.198 | 0.888 | 0.406 | 0.565 | 0.386 | 0.273 |
| PER | 9.167 | 7.683 | 3.526 | 55 | -0.59 | -3.12 | -10.3 | 16.67 | 16.61 | -21.5 |
| M/BV | 0.67 | 0.573 | 0.141 | -8.16 | -7.13 | 1.763 | 2.457 | 1.348 | 0.862 | 0.749 |
| NAPS | 5.74 | 5.500 | 4.750 | -0.13 | -0.15 | 1.86 | 2.99 | 3.71 | 3.47 | 4.020 |
| EPS | 0.52 | 0.41 | 0.19 | 0.02 | -1.83 | -1.05 | -0.72 | 0.30 | 0.18 | -0.14 |
| GRPS | 12.68 | 10.0 | 9.40 | 8.10 | 7.24 | 9.18 | 6.48 | 6.57 | 5.72 | 6.43 |
| SP | 3.85 | 3.15 | 0.67 | 1.1 | 1.07 | 3.28 | 7.40 | 5.00 | 2.99 | 3.010 |

Source: Firms' Financial Statements/ Researcher's Computations, 2015
Where: VAIC= Value Added Intellectual Coefficient; PER= Price- Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GR/S: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 3: Operational Variables for Firms (ICT Sector)

| Variable/Yr | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Interlinked Nig. Plc** | | | | | | | | | | |
| HCE | 1.69 | 0.653 | 1.3645 | (0.0802) | 4.897 | 1.7045 | 2.2675 | 3.201 | 3.212 | 3.2065 |
| SCE | 0.01 | 0.53 | 0.26 | (11.23) | 0.796 | 0.8235 | 0.7454 | 0.839 | 0.689 | 0.764 |
| CEE | 0.13 | 0.028 | 0.61 | (0.082) | (2.332) | 0.293 | (0.66) | 8.01 | (3.532) | 0.496 |
| PER | 1.853 | 0.608 | 3.63 | (0.387) | 1.214 | (0.066) | 0.303 | 0.066 | 0.221 | 0.018 |
| M/BV | 2.558 | 2.106 | 2.285 | 1.367) | (5.31) | 31.55 | 63.6 | 18.44 | (8.89) | (6.91) |
| NAPS | 1.13 | 1.833 | 1.896 | 1.882 | (0.544) | 0.058 | 0.025 | 0.077 | (0.136) | (0.191) |
| EPS | 1.56 | (6.35) | 1.35 | (7.96) | 2.38 | (27.79) | (5.25) | 21.36 | 5.48 | (71.74) |
| GRPS | 8.6 | 0.81 | 1.204 | 0.74 | 6.19 | 6.05 | 2.034 | 3.39 | 1.174 | 0.46 |
| SP | 2.89 | 0.86 | 4.9 | 3.08 | 2.89 | 1.83 | 1.59 | 1.42 | 1.21 | 1.32 |
| **NCR Nig. Plc.** | | | | | | | | | | |
| HCE | 0.9245 | 0.9065 | (2.5468) | 4.0651 | 2.0094 | 0.4016 | 0.9235 | 0.9075 | 2.0067 | 1.279 |
| SCE | 0.111 | 0.1768 | 0.6073 | 0.754 | 0.6552 | (0.49) | 0.1316 | 0.0126 | 0.72 | 0.1068 |
| CEE | 0.016 | 0.084 | (0.7) | 0.4 | 0.169 | 0.016 | (0.047) | 0.135 | 0.068 | 0.629 |
| PER | (0.67) | (0.62) | (0.19) | (1.29) | (1.55) | (2.81) | 2.93 | 0.09 | 0.11 | 0.13 |
| M/BV | 1.66 | 1.75 | 0.57 | 0.42 | 0.385 | 0.714 | 2.84 | 2.61 | 1.37 | 0.144 |
| NAPS | 0.832 | 0.816 | 0.876 | 3.429 | 4.544 | 5.675 | 1.063 | 1.185 | 0.967 | 21.98 |
| EPS | (2.05) | (2.32) | (2.55) | (1.11) | (1.13) | (1.44) | 1.03 | (42.74) | (37) | 4.82 |
| GRPS | 2.38 | 2.86 | 2.93 | 4.22 | 4.92 | 5.02 | 2.78 | 1.98 | 0.92 | 0.82 |
| SP | 1.38 | 1.43 | 0.50 | 1.44 | 1.75 | 4.05 | 3.02 | 3.09 | 3.1 | 3.02 |
| **Chams Nig. Plc.** | | | | | | | | | | |
| HCE | 2.476 | 3.731 | 0.055 | 8.4107 | 5.904 | 28.192 | 9.1083 | 12.904 | 14.027 | 13.091 |
| SCE | 0.5943 | 0.125 | -0.144 | 0.8811 | 0.8306 | 0.9645 | 0.8911 | 0.8934 | 0.3545 | 0.6501 |
| CEE | 0.51 | 0.134 | 0.848 | 0.354 | 0.197 | 1.03 | 0.604 | 0.574 | 0.601 | 0.5270 |
| PER | 14.11 | 5.19 | -5.92 | 12.00 | 11.25 | 0.29 | 0.45 | 1.08 | 0.663 | 0.668 |
| M/BV | 1.97 | 1.03 | 1.17 | 0.6 | 0.75 | 5.42 | 0.07 | 0.12 | 0.11 | 0.12 |
| NAPS | 2.02 | 2.11 | 1.92 | 4.55 | 4.2 | 0.68 | 43.85 | 23.6 | 23.4 | 22.83 |
| EPS | -0.28 | -0.46 | -0.38 | 0.13 | 0.28 | 12.64 | 6.73 | 2.81 | 4.16 | 64.32 |
| GRPS | 4.86 | 5.65 | 1.27 | 3.38 | 3.92 | 2.58 | 121.1 | 37.82 | 33.53 | 33.24 |
| SP | 3.95 | 2.18 | 2.25 | 2.73 | 3.15 | 3.69 | 3.08 | 3.04 | 2.76 | 2.89 |

Source: Firms' Financial Statements/ Researcher's Computations, 2015
Where VAIC= Value Added Intellectual Coefficient; PER= Price-Earnings Ratio; M/BV= Market to Book Value Ratio; EPS= Earnings per Share; NAPS= Net Asset per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 4: Operational Variables for firms(Oil and Gas Sector)

| Variable/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| Mobil Nig. Plc | | | | | | | | | | |
| HCE | 3.60 | 2,761 | 3.401 | 3.668 | 3.959 | 6.624 | 4.451 | 2.295 | 3.816 | 3.25 |
| SCE | 0.722 | 0.638 | 0.706 | 0.727 | 0.746 | 0.941 | 0.832 | 0.564 | 0.676 | 0.622 |
| CEE | 1.196 | 0.916 | 1.318 | 1.524 | 9.678 | 2.958 | 2.689 | 2.020 | 1.819 | 1.734 |
| P/ER | 12.29 | 12.76 | 11.03 | 10.9 | 32.01 | 53.24 | 38.22 | 25.05 | 16.37 | 13.94 |
| M/BV | 1.62 | 1.86 | 10 | 12.2 | 24.4 | 35.1 | 19.30 | 7.64 | 6.70 | 5.01 |
| NAPS | 73.07 | 58.88 | 13.38 | 11.59 | 12.42 | 9.44 | 9.35 | 23.41 | 24.64 | 36.7 |
| EPS | 9.65 | 8.56 | 12.14 | 12.93 | 9.46 | 6.22 | 4.71 | 7.14 | 10.08 | 13.2 |
| GRPS | 218.4 | 224.1 | 206.7 | 194.2 | 206.4 | 222.1 | 226.90 | 211.4 | 211.8 | 193.6 |
| SP | 118.6 | 101.25 | 133.91 | 141 | 302.78 | 331.19 | 180 | 178.87 | 165.00 | 184 |
| Total Nig. Plc | | | | | | | | | | |
| HCE | 3.3165 | 3.1081 | 2.8252 | 3.3592 | 2.9787 | 3.6696 | 2.7619 | 2.7217 | 3.6643 | 3.2657 |
| SCE | 0.6985 | 0.6783 | 0.6460 | 0.7023 | 0.6643 | 0.7275 | 0.6380 | 0.6326 | 0.7271 | 0.6939 |
| CEE | 1.4273 | 1.4380 | 1.3294 | 1.4784 | 1.7160 | 1.4887 | 1.4677 | 1.1664 | 2.0337 | 1.9460 |
| PER | 10.821 | 8.762 | 17.053 | 14.615 | 12.746 | 15.741 | 18.77 | 24.969 | 17.18 | 22.319 |
| M/BV | 43.59 | 3.622 | 6.484 | 8.897 | 7.244 | 9.51 | 9.64 | 10.9 | 10.1 | 16.6 |
| NAPS | 39 | 33.29 | 29.53 | 26.3 | 20.57 | 21.41 | 18.67 | 16.98 | 18.17 | 11.02 |
| EPS | 15.71 | 13.76 | 11.23 | 16.01 | 11.69 | 12.94 | 9.56 | 7.41 | 10.65 | 8.18 |
| GRPS | 701 | 642 | 512 | 473 | 525.94 | 523.4 | 404.5 | 372.8 | 373.2 | 279.80 |
| SP | 170 | 120.57 | 188.1 | 234 | 149 | 203.69 | 180 | 185.08 | 183.01 | 182. |
| Oando Nig. Plc | | | | | | | | | | |
| HCE | 6.0157 | 6.4924 | 4.4090 | 7.0862 | 10.6742 | 9.7973 | 4.6163 | 3.9925 | 3.2850 | 3.7884 |
| SCE | 0.806 | 0.5477 | 0.4512 | 0.4884 | 0.8324 | 0.6773 | 0.2397 | 0.3852 | 0.3392 | 0.3985 |
| CEE | 0.526 | 0.8460 | 0.7732 | 0.8589 | 0.9063 | 0.8919 | 0.7834 | 0.7495 | 0.6963 | 0.7360 |
| PER | 5.659 | 7.572 | 1.358 | 1.284 | 8.3 | 8.666 | 16.267 | 1.62 | 48.05 | 76 |
| M/BV | 0.578 | 0.749 | 0.541 | 1.283 | 1.611 | 1.609 | 1.628 | 2.255 | 1.732 | 2.487 |
| NAPS | 44.24 | 46.33 | 40.89 | 51.4 | 58.35 | 49.6 | 74.92 | 42.58 | 55.49 | 45.03 |
| EPS | 4.52 | 4.58 | 1.62 | 8.29 | 11.32 | 9.22 | 7.51 | 4.11 | 2.02 | 1.48 |
| GRPS | 585.7 | 592.03 | 515.9 | 418.66 | 744.37 | 750.2 | 493.04 | 730.66 | 424.92 | 421.16 |
| SP | 25.58 | 23.82 | 22 | 66 | 93.99 | 79.8 | 122 | 96 | 96.1 | 112 |

Source: Firm's Financial Statements/ Researcher's Computations, 2015

Where VAIC= Value Added Intellectual Coefficient; PER= Price – Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GR/S: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 5: Operational Variables for firms(Food & Beverage Sector)

| Variable/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Nestle Plc** | | | | | | | | | | |
| HCE | 3.1092 | 3.3152 | 3.1792 | 3.2774 | 2.9107 | 2.8738 | 2.4651 | 2.6102 | 3.1757 | 2.7286 |
| SCE | 1.1935 | 1.2848 | 1.5299 | 2.0563 | 2.2836 | 2.2406 | 2.6150 | 2.3397 | 2.0843 | 2.3642 |
| CEE | 0.6784 | 0.6984 | 0.6855 | 0.6949 | 0.6564 | 0.6520 | 0.5943 | 0.6169 | 0.6850 | 0.6335 |
| PER | 42.735 | 26.247 | 21.01 | 19.316 | 16.172 | 15.182 | 31.481 | 21.942 | 18.625 | 20.609 |
| M/BV | 23.435 | 16.23 | 15.221 | 16.23 | 15.221 | 14.004 | 27.48 | 19.51 | 16.519 | 45.616 |
| NAPS | 51.31 | 43.13 | 29.28 | 22.5 | 15.96 | 13.67 | 10.07 | 12.04 | 11.32 | 3.28 |
| EPS | 28.08 | 26.67 | 21.21 | 19.08 | 14.81 | 12.61 | 8.79 | 10.71 | 10.04 | 7.26 |
| GRPS | 167.89 | 147.23 | 123.58 | 121.30 | 103.42 | 78.33 | 66.65 | 72.71 | 64.97 | 53.85 |
| SP | 1200 | 700 | 445.66 | 368.55 | 239.50 | 191.44 | 279.50 | 235 | 187 | 149.62 |
| | | | | | | | | | | |
| **CADBURY Nig. Plc.** | | | | | | | | | | |
| HCE | 2.734 | 2.611 | 2.64 | 1.970 | 1.524 | 1.5134 | 0.7997 | 1.545 | 2.564 | 2.612 |
| SCE | 0.634 | 0.617 | 0.558 | 0.492 | 0.6011 | 0.3397 | 0.5485 | 0.6011 | 0.5029 | 0.502 |
| CEE | 0.823 | 0.844 | 0.846 | 0.844 | 0.896 | 0.767 | 0.816 | 0.896 | 0.852 | 0.844 |
| PER | 4.94 | 5.64 | 6.34 | 7.11 | 3.784 | 14.66 | 23.45 | 4.5 | 36.72 | 24.79 |
| M/BV | 1.21 | 1.22 | 1.49 | 1.71 | 0.94 | 2.1 | 3.38 | 2.35 | 4.57 | 17.61 |
| NAPS | 20.01 | 23.5 | 21.72 | 22.08 | 22.79 | 16.74 | 17.46 | 15.35 | 14.31 | 3.28 |
| EPS | 4.96 | 5.08 | 5.12 | 5.34 | 5.66 | 2.4 | 2.42 | 0.8 | 1.78 | 2.33 |
| GRPS | 45.34 | 48.39 | 56.34 | 65.23 | 69.42 | 61.63 | 52.74 | 45.67 | 42.67 | 36.60 |
| SP | 24.48 | 28.65 | 32.45 | 37.95 | 21.42 | 35.18 | 58.99 | 36 | 65.36 | 57.75 |
| | | | | | | | | | | |
| **7-Up Nig. Plc.** | | | | | | | | | | |
| HCE | 2.5384 | 2.2703 | 1.9727 | 2.2605 | 2.2373 | 2.0175 | 2.1093 | 1.8553 | 1.8721 | 2.1108 |
| SCE | 0.6061 | 0.5595 | 0.4931 | 1.674 | 0.5530 | 0.5043 | 1.229 | 0.4610 | 0.4658 | 0.5262 |
| CEE | 1.6928 | 1.6450 | 1.6849 | 0.5529 | 1.4075 | 1.3666 | 0.6261 | 0.1298 | 1.3818 | 1.3667 |
| P/ER | 10.987 | 15.935 | 13.05 | 9.8 | 9.86 | 14.87 | 19.62 | 9.84 | 17.06 | 10.18 |
| M/BV | 3.637 | 2.609 | 3.57 | 2.17 | 1.84 | 3.29 | 3.81 | 2.06 | 3.38 | 2.93 |
| NAPS | 19.63 | 16 | 13 | 18 | 16 | 14 | 12.26 | 13.6 | 11.75 | 9.68 |
| EPS | 4.46 | 2.62 | 3.56 | 3.98 | 2.98 | 3.14 | 2.38 | 2.85 | 2.33 | 2.79 |
| GRPS | 100.05 | 93.45 | 79.76 | 80.13 | 68.08 | 59.65 | 53.28 | 53 | 42.36 | 36.47 |
| SP | 71.4 | 41.75 | 46.47 | 39 | 29.4 | 41.75 | 46.7 | 28.04 | 39.74 | 28.04 |

Source: Firm's Financial Statements/ Researcher's Computations, 2015
Where VAIC= Value Added Intellectual Coefficient; PER= Price–Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GR/S: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 6: Operational Variables for Firms(Personal/Household Consumables)

| Variables/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Unilever Plc.** | | | | | | | | | | |
| HCE | 2.8993 | 3.3643 | 3.4461 | 3.1841 | 2.9929 | 2.3499 | 1.9609 | 1.3222 | 2.3637 | 2.5676 |
| SCE | 0.6551 | 0.7028 | 0.7098 | 0.6859 | 0.6659 | 0.5744 | 0.4900 | 0.2437 | 0.5769 | 0.6105 |
| CEE | 1.5502 | 1.5197 | 1.3414 | 1.3001 | 1.2783 | 1.3439 | 1.3264 | 1.0725 | 1.529 | 1.6828 |
| | | | | | | | | | | |
| P/ER | 43.071 | 31.757 | 19.863 | 21.847 | 17.13 | 15.043 | 78.036 | 29.07 | 50.02 | 25.694 |
| M/BV | 21.5 | 17.7 | 11.4 | 11.00 | 8.52 | 0.59 | 16.4 | 12.00 | 11.7 | 9.2 |
| NAPS | 2.55 | 2.65 | 2.55 | 2.2 | 2.17 | 17.7 | 1.33 | 1.04 | 1.84 | 2.01 |
| EPS | 1.27 | 1.48 | 1.46 | 1.11 | 1.08 | 0.69 | 0.28 | -0.43 | 0.43 | 0.72 |
| GRPS | 15.86 | 14.68 | 14.46 | 12.37 | 11.76 | 9.88 | 8.98 | 6.75 | 11.03 | 9.44 |
| SP | 53.8 | 46.5 | 28.5 | 25.94 | 18.5 | 10.38 | 21.85 | 12.5 | 21.51 | 18.5 |
| | | | | | | | | | | |
| **PZCussons Plc.** | | | | | | | | | | |
| HCE | 2.5661 | 1.9813 | 2.4762 | 2.6304 | 2.6271 | 3.2252 | 2.2418 | 2.6061 | 2.6123 | 2.5506 |
| SCE | 0.6103 | 0.4953 | 0.5962 | 0.6198 | 0.6194 | 0.6899 | 0.5539 | 0.6163 | 0.6172 | 0.6079 |
| CEE | 0.3607 | 0.3363 | 0.4032 | 0.4027 | 0.4219 | 0.4431 | 0.3732 | 0.3312 | 0.3949 | 0.3889 |
| | | | | | | | | | | |
| P/ER | 41.463 | 39.098 | 21.341 | 19.006 | 13.954 | 22.572 | 19.457 | 14.455 | 9.85 | 19.524 |
| M/BV | 4.59 | 2.31 | 2.7 | 2.6 | 1.89 | 2.72 | 2.23 | 1.85 | 1.34 | 1.49 |
| NAPS | 11.11 | 10.31 | 12.97 | 12.19 | 11.2 | 10.3 | 12.03 | 11.34 | 9.32 | 10.73 |
| EPS | 1.23 | 0.61 | 1.64 | 1.67 | 1.52 | 1.24 | 1.38 | 1.45 | 1.27 | 0.82 |
| GRPS | 17.97 | 18.17 | 20.74 | 19.73 | 25.49 | 20.76 | 21.34 | 16.62 | 15.64 | 16.07 |
| SP | 37.00 | 28.00 | 28.00 | 31.45 | 25.00 | 27.99 | 26.85 | 25.98 | 16.2 | 16.01 |
| | | | | | | | | | | |
| **Vitafoam Plc.** | | | | | | | | | | |
| HCE | 3.1824 | 3.4246 | 3.5344 | 4.0424 | 3.5238 | 4.2713 | 3.8952 | 2.6965 | 2.1885 | 2.2955 |
| SCE | 0.6858 | 0.7080 | 0.7171 | 0.7526 | 0.7162 | 0.7659 | 0.7433 | 0.6291 | 0.6858 | 0.5643. |
| CEE | 0.7893 | 0.7842 | 0.7083 | 0.6844 | 0.7377 | 0.8314 | 0.9228 | 0.6213 | 0.7045 | 1.2113 |
| P/ER | 9.608 | 5.304 | 8.261 | 10.159 | 7.142 | 5.471 | 18.15 | 13.529 | 28.176 | 8.537 |
| M/BV | 1.22 | 1.02 | 1.66 | 2.13 | 1.71 | 2.01 | 5.74 | 4.26 | 3.99 | 2.97 |
| NAPS | 4.01 | 3.59 | 3.43 | 3.01 | 2.64 | 2.31 | 1.71 | 1.08 | 1.2 | 1.18 |
| EPS | 0.51 | 0.69 | 0.69 | 0.63 | 0.63 | 0.85 | 0.54 | 0.34 | 0.17 | 0.41 |
| GRPS | 19.04 | 17.25 | 17.07 | 12.88 | 11.89 | 12.47 | 7.51 | 4.96 | 5.38 | 5.88 |
| SP | 4.90 | 3.66 | 5.7 | 6.40 | 4.5 | 4.65 | 9.82 | 4.6 | 4.79 | 3.50 |

**Source: Firm's Financial Statement/ Researcher's Computations, 2015**
Where VAIC= Value Added Intellectual Coefficient; PER= Price– Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GR/S: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 7: VAIC and Corporate Valuation Variables (Brewery Sector)

| Variables/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| NB Plc | | | | | | | | | | |
| HCE | 4.2143 | 4.408 | 5.9857 | 4.5652 | 4.5714 | 5.5732 | 4.8506 | 4.5212 | 4.1458 | 4.7595 |
| SCE | 0.7627 | 0.7730 | 0.8378 | 0.7809 | 0.7812 | 0.8206 | 0.7938 | 0.7788 | 0.7588 | 0.7917 |
| CEE | 1.0370 | 1.1275 | 1.3243 | 1.6674 | 1.6913 | 2.2170 | 1.4408 | 1.2997 | 1.2481 | 1.45 |
| PER | 29.46 | 29.22 | 18.59 | 19.22 | 14.37 | 12.01 | 19.6 | 25.868 | 35.596 | 63.88 |
| M/BV | 11.298 | 11.893 | 9.105 | 11.629 | 8.607 | 9.589 | 8.581 | 7.777 | 8.452 | 11.44 |
| NAPS | 14.86 | 12.36 | 10.73 | 6.63 | 6.16 | 4.26 | 5.71 | 4.79 | 4.59 | 3.74 |
| EPS | 5.7 | 5.03 | 5.08 | 4.01 | 3.69 | 3.4 | 2.5 | 1.44 | 1.09 | 0.67 |
| GRPS | 35.52 | 33.54 | 29.97 | 24.58 | 21.71 | 19.23 | 14.78 | 11.41 | 21.19 | 19.46 |
| SP | 167.99 | 147 | 94.42 | 77.1 | 53.02 | 40.85 | 49 | 37.25 | 38.8 | 57.75 |
| | | | | | | | | | | |
| Guinness Nig. Plc | | | | | | | | | | |
| HCE | 4.3402 | 5.5924 | 6.8549 | 5.4001 | 5.5183 | 6.0959 | 6.6300 | 5.8518 | 5.7947 | 5.8684 |
| SCE | 0.7696 | 0.8212 | 0.8541 | 0.8148 | 0.8207 | 0.8359 | 0.8492 | 0.8291 | 1.128 | 0.8296 |
| CEE | 0.8691 | 1.2080 | 1.2112 | 1.2508 | 1.2949 | 0.9047 | 1.0144 | 1.0290 | 0.8243 | 1.3725 |
| PER | 31.66 | 22.71 | 20.15 | 17.025 | 14.05 | 15.42 | 17.46 | 21.61 | 21.12 | 23.99 |
| M/BV | 8.212 | 8.632 | 8.971 | 6.835 | 6.036 | 4.962 | 5.9 | 6.259 | 5.894 | 10.3 |
| NAPS | 30.57 | 26.18 | 27.31 | 23.19 | 21.37 | 24.99 | 21.45 | 17.4 | 14.86 | 15.66 |
| EPS | 7.93 | 9.95 | 12.16 | 9.31 | 9.18 | 8.04 | 7.25 | 5.04 | 4.12 | 6.71 |
| GRPS | 81.32 | 78.96 | 83.84 | 74.15 | 60.44 | 46.9 | 42.22 | 36.36 | 39.71 | 67.12 |
| SP | 236 | 275 | 250 | 190.56 | 127.5 | 124 | 126.55 | 107.99 | 96 | 116.99 |
| | | | | | | | | | | |
| Inter. Breweries | | | | | | | | | | |
| HCE | 3.726 | 3.887 | 0.399 | 3.209 | 1.15 | 1.796 | 1.689 | 1.801 | 1.622 | 1.568 |
| SCE | 0.707 | 0.743 | -1.507 | 0.688 | 0.13 | 0.443 | 0.4203 | 0.421 | 0.345 | 0.306 |
| CEE | 0.544 | 0.675 | 0.21 | 0.664 | -1.47 | 1.736 | 1.071 | 1.423 | 0.896 | 0.845 |
| P/ER | -11.76 | -23.82 | -5.53 | -171.33 | -16.2 | 163.7 | -22.6 | -11.4 | -11.8 | -5.7 |
| M/BV | 7.74 | 14.8 | 7.6 | -161 | -17.5 | 49.1 | -2.03 | -2.14 | -2.18 | -2.51 |
| NAPS | 0.38 | 0.45 | 0.75 | -0.04 | -0.13 | 0.1 | -2.55 | -2.29 | -1.62 | -1.02 |
| EPS | -0.25 | -0.28 | -1.03 | 0.09 | -0.14 | 0.03 | -0.3 | 0.43 | -0.3 | -0.45 |
| GRPS | 8.46 | 13.17 | 9.378 | 4.539 | 1.53 | 0.882 | 2.19 | 1.22 | 1.57 | 1.82 |
| SP | 2.94 | 6.67 | 5.7 | 6.42 | 2.27 | 4.91 | 5.2 | 4.92 | 3.54 | 2.57 |

Source: Firms' Financial Statements/ Researcher's Computations, 2015
Where VAIC= Value Added Intellectual Coefficient; P/ER= Price – Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 8: VAIC and Corporate Valuation Variables of Firms(Conglomerates)

| Variables/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| **UACN** | | | | | | | | | | |
| HCE | 4.1033 | 3.7178 | 2.6545 | 3.527 | 3.5122 | 5.0041 | 4.33 | 4.263 | 3.0898 | 3.338 |
| SCE | 0.7563 | 0.731 | 0.6233 | 0.7144 | 0.7153 | 0.8002 | 0.7691 | 0.7654 | 0.6764 | 0.7004 |
| CEE | 0.616 | 0.556 | 0.545 | 0.563 | 0.437 | 0.357 | 0.509 | 0.559 | 0.472 | 0.586 |
| | | | | | | | | | | |
| P/ER | 2.2789 | 16.342 | 80.27 | 18.854 | 11.703 | 16.321 | 21.925 | 10.622 | 12.984 | 10.343 |
| M/BV | 1.804 | 1.109 | 0.81 | 1.317 | 1.047 | 0.925 | 3.641 | 1.952 | 1.535 | 1.352 |
| NAPS | 37.13 | 37.86 | 35.65 | 28.48 | 35.11 | 37.39 | 14.39 | 13.55 | 10.74 | 10.48 |
| EPS | 2.94 | 2.57 | 0.37 | 1.99 | 3.14 | 2.12 | 2.39 | 2.49 | 1.27 | 1.37 |
| GRPS | 40.98 | - | 79.45 | 65.36 | 70.72 | 67.03 | 39.33 | 35.49 | 34.02 | 31.38 |
| SP | 67 | 42 | 27.7 | 38 | 36.75 | 34.6 | 52.4 | 26.45 | 17 | 14.17 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| **A.G Leventis** | | | | | | | | | | |
| HCE | 2.02 | 1.888 | 2.526 | 2.3 | 2.865 | 3.287 | 2.105 | 1.838 | 3.9106 | 3.372 |
| SCE | 0.505 | 0.47 | 0.6041 | 0.5656 | 0.651 | 0.696 | 0.525 | 0.456 | 0.744 | 0.7034 |
| CEE | 0.204 | 0.148 | 0.488 | 0.372 | 0.39 | 0.409 | 0.265 | 0.365 | 0.251 | 0.233 |
| | | | | | | | | | | |
| P/ER | 4.452 | 5.071 | 5.111 | 7.621 | 6.175 | 21.944 | 15 | 8.857 | 11.182 | 5.909 |
| M/BV | 0.831 | 0.953 | 0.342 | 0.557 | 0.635 | 2.232 | 1.5 | 0.916 | 0.637 | 0.335 |
| NAPS | 1.66 | 1.49 | 4.03 | 3.97 | 3.89 | 3.54 | 3.4 | 2.03 | 1.93 | 1.94 |
| EPS | 0.31 | 0.28 | 0.27 | 0.29 | 0.4 | 0.36 | 0.34 | 0.21 | 0.11 | 0.11 |
| GRPS | 4.5 | 4.17 | 6.84 | 5.04 | 5.13 | 4.24 | 3.28 | 3.24 | 3.18 | 2.98 |
| SP | 1.38 | 1.42 | 1.38 | 2.21 | 2.47 | 7.9 | 5.1 | 1.86 | 1.23 | 0.65 |
| | | | | | | | | | | |
| **Chellarams** | | | | | | | | | | |
| HCE | 1.876 | 1.988 | 2.646 | 3.084 | 3.174 | 3.977 | 3.106 | 2.44 | 2.5 | 2.47 |
| SCE | 0.233 | 0.245 | 0.312 | 0.404 | 0.432 | 0.749 | 0.678 | 0.59 | 0.6 | 0.02 |
| CEE | 0.278 | 0.265 | 0.285 | 0.311 | 0.315 | 0.428 | 0.453 | 0.51 | 0.387 | 0.389 |
| P/ER | 29.88 | 16.31 | 13.72 | 18.56 | 39.19 | 23.37 | 28.94 | 89.8 | 176.86 | 72.33 |
| M/BV | 7.59 | 13.28 | 20.58 | 29.79 | 39.19 | 21.77 | 28.93 | 36.8 | 27.51 | 29.8 |
| NAPS | 0.63 | 0.43 | 0.4 | 0.38 | 0.32 | 0.73 | 0.63 | 0.61 | 0.9 | 0.86 |
| EPS | 0.16 | 0.35 | 0.3 | 0.61 | 0.66 | 0.68 | 0.74 | 0.25 | 0.14 | 0.35 |
| GRPS | 32.25 | 34.58 | 32.3 | 26.86 | 22.33 | 40.18 | 30.92 | 24.51 | 43.8 | 35.9 |
| SP | 4.78 | 5.71 | 8.23 | 11.32 | 12.54 | 15.89 | 18.23 | 22.45 | 24.76 | 25.63 |

Source: Firm's Financial Statements/ Researcher's Computations, 2015

**Where:** VAIC= Value Added Intellectual Coefficient; P/E= Price/Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share; SP= Share Price. HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 9: Regression Analysis on the Healthcare Sector Using Model …………….(1)

Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 04:41
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 8.737434 | 7.102359 | 1.230216 | 0.2266 |
| SCE | -1.835574 | 14.47629 | -0.126799 | 0.8998 |
| CEE | 3.124486 | 3.055166 | 1.022689 | 0.3133 |
| C | -5.980713 | 13.32657 | -0.448781 | 0.6563 |

| R-squared | 0.141956 | Mean dependent var | 15.80833 |
|---|---|---|---|
| Adjusted R-squared | 0.070452 | S.D. dependent var | 25.34375 |
| S.E. of regression | 24.43469 | Akaike info criterion | 9.324524 |
| Sum squared resid | 21493.94 | Schwarz criterion | 9.493412 |
| Log likelihood | -182.4905 | Hannan-Quinn criter. | 9.385588 |
| F-statistic | 1.985295 | Durbin-Watson stat | 2.108849 |
| Prob(F-statistic) | 0.133568 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 10: Regression Analysis on Healthcare Sector Using Model ………………(2)

Dependent Variable: MBV
Method: Least Squares
Date: 04/30/15   Time: 13:31
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 1.859244 | 0.758725 | 2.450484 | 0.0193 |
| SCE | -2.224842 | 1.546462 | -1.438666 | 0.1589 |
| CEE | -0.753767 | 0.326375 | -2.309512 | 0.0268 |
| C | -1.479571 | 1.423640 | -1.039287 | 0.3056 |

| R-squared | 0.252797 | Mean dependent var | 1.685775 |
|---|---|---|---|
| Adjusted R-squared | 0.190531 | S.D. dependent var | 2.901273 |
| S.E. of regression | 2.610290 | Akaike info criterion | 4.851439 |
| Sum squared resid | 245.2901 | Schwarz criterion | 5.020327 |
| Log likelihood | -93.02878 | Hannan-Quinn criter. | 4.912504 |
| F-statistic | 4.059903 | Durbin-Watson stat | 1.495885 |
| Prob(F-statistic) | 0.013894 | | |

**Source:    Researcher's    Computations    using    E-Views    Statistical    Software    8.0,    2015**

Appendix 11: Regression Analysis On Healthcare Sector Using Model………..(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 13:38
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.707645 | 0.504995 | 1.401293 | 0.1697 |
| SCE | 0.883169 | 1.029299 | 0.858030 | 0.3966 |
| CEE | 0.315736 | 0.217230 | 1.453467 | 0.1548 |
| C | -2.033710 | 0.947551 | -2.146281 | 0.0387 |

| | | | |
|---|---|---|---|
| R-squared | 0.359982 | Mean dependent var | 0.183000 |
| Adjusted R-squared | 0.306648 | S.D. dependent var | 2.086478 |
| S.E. of regression | 1.737364 | Akaike info criterion | 4.037255 |
| Sum squared resid | 108.6636 | Schwarz criterion | 4.206143 |
| Log likelihood | -76.74509 | Hannan-Quinn criter. | 4.098319 |
| F-statistic | 6.749485 | Durbin-Watson stat | 1.575154 |
| Prob(F-statistic) | 0.000995 | | |

Source:    Researcher's    Computations    using    E-Views    Statistical    Software    8.0,    2015

Appendix  12: Regression Analysis on Healthcare Sector  Using Model ………………(4)

Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 13:41
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 1.863756 | 1.202403 | 1.550026 | 0.1299 |
| SCE | 1.371629 | 2.450782 | 0.559670 | 0.5792 |
| CEE | 0.539137 | 0.517228 | 1.042358 | 0.3042 |
| C | -1.997154 | 2.256138 | -0.885209 | 0.3819 |

| | | | |
|---|---|---|---|
| R-squared | 0.310885 | Mean dependent var | 3.303250 |
| Adjusted R-squared | 0.253458 | S.D. dependent var | 4.787702 |
| S.E. of regression | 4.136701 | Akaike info criterion | 5.772314 |
| Sum squared resid | 616.0425 | Schwarz criterion | 5.941202 |
| Log likelihood | -111.4463 | Hannan-Quinn criter. | 5.833378 |
| F-statistic | 5.413632 | Durbin-Watson stat | 0.928374 |
| Prob(F-statistic) | 0.003532 | | |

Source:    Researcher's    Computations    using    E-Views    Statistical    Software    8.0,    2015

Appendix 13: Regression Analysis on Healthcare Sector  Using Model ……………(5)

Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 13:43
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 2.406691 | 1.651647 | 1.457147 | 0.1537 |
| SCE | -0.351619 | 3.366447 | -0.104448 | 0.9174 |
| CEE | 0.028980 | 0.710476 | 0.040789 | 0.9677 |
| C | 4.506868 | 3.099080 | 1.454260 | 0.1545 |

| R-squared | 0.140902 | Mean dependent var | 10.14650 |
|---|---|---|---|
| Adjusted R-squared | 0.069310 | S.D. dependent var | 5.890047 |
| S.E. of regression | 5.682262 | Akaike info criterion | 6.407215 |
| Sum squared resid | 1162.372 | Schwarz criterion | 6.576103 |
| Log likelihood | -124.1443 | Hannan-Quinn criter. | 6.468280 |
| F-statistic | 1.968135 | Durbin-Watson stat | 0.727753 |
| Prob(F-statistic) | 0.136177 | | |

Source:    Researcher's    Computations       using    E-Views    Statistical    Software    8.0,    2015


Appendix    14:    Regression    Analysis    using
Model(6)

Dependent variable: SP
Method: Least Squares
Date: 04/30/15   Time: 13:45
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 9.534646 | 3.400839 | 2.803616 | 0.0081 |
| SCE | -7.851133 | 6.931715 | -1.132639 | 0.2649 |
| CEE | -0.835512 | 1.462912 | -0.571129 | 0.5715 |
| C | -9.479825 | 6.381191 | -1.485589 | 0.1461 |

| R-squared | 0.247557 | Mean dependent var | 9.748750 |
|---|---|---|---|
| Adjusted R-squared | 0.184853 | S.D. dependent var | 12.95902 |
| S.E. of regression | 11.70012 | Akaike info criterion | 7.851714 |
| Sum squared resid | 4928.138 | Schwarz criterion | 8.020602 |
| Log likelihood | -153.0343 | Hannan-Quinn criter. | 7.912779 |
| F-statistic | 3.948051 | Durbin-Watson stat | 1.070406 |
| Prob(F-statistic) | 0.015621 | | |

Source:    Researcher's    Computations       using    E-Views    Statistical    Software    8.0,    2015

Appendix 15:  Regression Analysis on ICT Sector Using   Model ……………(1)

Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 05:39
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.025814 | 0.140701 | 0.183470 | 0.8559 |
| SCE | 0.269611 | 0.390861 | 0.689789 | 0.4967 |
| CEE | -0.074568 | 0.488758 | -0.152567 | 0.8800 |
| C | 1.347307 | 1.032383 | 1.305046 | 0.2038 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.023350 | Mean dependent var | | 1.448586 |
| Adjusted R-squared | -0.093848 | S.D. dependent var | | 4.281679 |
| S.E. of regression | 4.478087 | Akaike info criterion | | 5.963711 |
| Sum squared resid | 501.3315 | Schwarz criterion | | 6.152303 |
| Log likelihood | -82.47381 | Hannan-Quinn criter. | | 6.022776 |
| F-statistic | 0.199239 | Durbin-Watson stat | | 1.462359 |
| Prob(F-statistic) | 0.895910 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015


Appendix 16: Regression Analysis on ICT Sector Using   Model ……………(2)

Dependent Variable: M/BV
Method: Least Squares
Date: 04/30/15   Time: 18:38
Sample: 0001 0030
Included observations:30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -0.199350 | 0.434615 | -0.458681 | 0.6503 |
| | 0.554121 | | | |
| SCE | 0.408114 | 1.210847 | 0.457631 | 0.6510 |
| CEE | | | | |
| C | 5.101534 | 3.191442 | 1.598504 | 0.1220 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.013027 | Mean dependent var | | 4.259276 |
| Adjusted R-squared | -0.062894 | S.D. dependent var | | 13.47840 |
| S.E. of regression | 13.89579 | Akaike info criterion | | 8.198746 |
| Sum squared resid | 5020.417 | Schwarz criterion | | 8.340190 |
| Log likelihood | -115.8818 | Hannan-Quinn criter. | | 8.243045 |
| F-statistic | 0.171588 | Durbin-Watson stat | | 1.146810 |
| Prob(F-statistic) | 0.843272 | | | |

Source:    Researcher's    Computations        using    E-Views    Statistical    Software    8.0,    2015

Appendix 17: Regression Analysis on ICT Sector Using Model ……………(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 18:40
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.768059 | 0.564045 | 1.361700 | 0.1850 |
| SCE | -0.181645 | 1.570464 | -0.115663 | 0.9088 |
| CEE | 1.700581 | 1.963845 | 0.865945 | 0.3944 |
| C | -8.492092 | 4.072816 | -2.085066 | 0.0470 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.101251 | Mean dependent var | | -4.716667 |
| Adjusted R-squared | -0.002451 | S.D. dependent var | | 17.97419 |
| S.E. of regression | 17.99621 | Akaike info criterion | | 8.741765 |
| Sum squared resid | 8420.452 | Schwarz criterion | | 8.928591 |
| Log likelihood | -127.1265 | Hannan-Quinn criter. | | 8.801532 |
| F-statistic | 0.976364 | Durbin-Watson stat | | 2.173081 |
| Prob(F-statistic) | 0.418978 | | | |

Source:    Researcher's    Computations    using    E-Views    Statistical    Software    8.0,    2015

Appendix 18: Regression Analysis On ICT Sector Using Model ……………(4)

Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 18:42
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.661539 | 0.315572 | 2.096318 | 0.0459 |
| SCE | 0.047661 | 0.878644 | 0.054244 | 0.9572 |
| CEE | 0.183351 | 1.098733 | 0.166875 | 0.8688 |
| C | 3.004758 | 2.278662 | 1.318650 | 0.1988 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.156816 | Mean dependent var | | 5.885233 |
| Adjusted R-squared | 0.059525 | S.D. dependent var | | 10.38227 |
| S.E. of regression | 10.06853 | Akaike info criterion | | 7.580272 |
| Sum squared resid | 2635.758 | Schwarz criterion | | 7.767099 |
| Log likelihood | -109.7041 | Hannan-Quinn criter. | | 7.640040 |
| F-statistic | 1.611831 | Durbin-Watson stat | | 1.803147 |
| Prob(F-statistic) | 0.210730 | | | |

Source:    Researcher's    Computations    using    E-Views    Statistical    Software    8.0,    2015

Appendix 19: Regression Analysis On ICT Sector Using  Model ……………(5)

Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 18:44
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 1.283107 | 0.716754 | 1.790164 | 0.0851 |
| SCE | 0.520233 | 1.995651 | 0.260683 | 0.7964 |
| CEE | 0.170296 | 2.495536 | 0.068240 | 0.9461 |
| C | 4.676727 | 5.175490 | 0.903630 | 0.3745 |

| | | | |
|---|---|---|---|
| R-squared | 0.125510 | Mean dependent var | 10.22773 |
| Adjusted R-squared | 0.024607 | S.D. dependent var | 23.15517 |
| S.E. of regression | 22.86850 | Akaike info criterion | 9.220964 |
| Sum squared resid | 13597.17 | Schwarz criterion | 9.407790 |
| Log likelihood | -134.3145 | Hannan-Quinn criter. | 9.280731 |
| F-statistic | 1.243872 | Durbin-Watson stat | 2.184433 |
| Prob(F-statistic) | 0.314051 | | |

Source:    Researcher's    Computations        using    E-Views    Statistical    Software    8.0,    2015

Appendix 20: Regression Analysis on ICT Sector Using Model ……………(6)

Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 18:46
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.047328 | 0.032135 | 1.472811 | 0.1528 |
| SCE | -0.098367 | 0.089472 | -1.099419 | 0.2817 |
| CEE | -0.013441 | 0.111884 | -0.120131 | 0.9053 |
| C | 2.389360 | 0.232035 | 10.29740 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.097598 | Mean dependent var | 2.583000 |
| Adjusted R-squared | -0.006526 | S.D. dependent var | 1.021946 |
| S.E. of regression | 1.025275 | Akaike info criterion | 3.011364 |
| Sum squared resid | 27.33090 | Schwarz criterion | 3.198191 |
| Log likelihood | -41.17047 | Hannan-Quinn criter. | 3.071132 |
| F-statistic | 0.937328 | Durbin-Watson stat | 0.856672 |
| Prob(F-statistic) | 0.436811 | | |

Source**:** Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 21: Regression Analysis on Oil and Gas Sector Using Model ……………(1)

Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 05:08
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -5.182864 | 3.142395 | -1.649335 | 0.1111 |
| SCE | 105.3942 | 67.75134 | 1.555603 | 0.1319 |
| CEE | 3.610984 | 4.551908 | 0.793290 | 0.4348 |
| C | -40.85601 | 38.14542 | -1.071060 | 0.2940 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.145607 | Mean dependent var | | 18.78540 |
| Adjusted R-squared | 0.047023 | S.D. dependent var | | 16.44610 |
| S.E. of regression | 16.05477 | Akaike info criterion | | 8.513455 |
| Sum squared resid | 6701.646 | Schwarz criterion | | 8.700281 |
| Log likelihood | -123.7018 | Hannan-Quinn criter. | | 8.573222 |
| F-statistic | 1.476987 | Durbin-Watson stat | | 1.488364 |
| Prob(F-statistic) | 0.243898 | | | |

Source:    Researcher's    Computations       using    E-Views    Statistical    Software    8.0,    2015

Appendix 22: Regression Analysis on Oil and Gas Sector Using Model ……………(2)

Dependent Variable: MBV
Method: Least Squares
Date: 04/30/15   Time: 18:03
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -2.448519 | 1.527864 | -1.602576 | 0.1211 |
| SCE | 60.67383 | 32.94138 | 1.841872 | 0.0769 |
| CEE | 8.760318 | 2.213184 | 3.958242 | 0.0005 |
| C | -36.42053 | 18.54669 | -1.963722 | 0.0603 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.477519 | Mean dependent var | | 8.823767 |
| Adjusted R-squared | 0.417233 | S.D. dependent var | | 10.22541 |
| S.E. of regression | 7.805991 | Akaike info criterion | | 7.071226 |
| Sum squared resid | 1584.271 | Schwarz criterion | | 7.258052 |
| Log likelihood | -102.0684 | Hannan-Quinn criter. | | 7.130993 |
| F-statistic | 7.920871 | Durbin-Watson stat | | 2.163190 |
| Prob(F-statistic) | 0.000649 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 23: Regression Analysis on Oil & and Gas Sector Using Model ……………(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 18:05
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 1.339735 | 0.687727 | 1.948063 | 0.0623 |
| SCE | -35.86033 | 14.82768 | -2.418472 | 0.0229 |
| CEE | 2.504432 | 0.996205 | 2.513973 | 0.0185 |
| C | 26.18444 | 8.348292 | 3.136502 | 0.0042 |

| R-squared | 0.296337 | Mean dependent var | 8.863333 |
|---|---|---|---|
| Adjusted R-squared | 0.215145 | S.D. dependent var | 3.966108 |
| S.E. of regression | 3.513657 | Akaike info criterion | 5.474757 |
| Sum squared resid | 320.9903 | Schwarz criterion | 5.661584 |
| Log likelihood | -78.12136 | Hannan-Quinn criter. | 5.534525 |
| F-statistic | 3.649833 | Durbin-Watson stat | 1.341241 |
| Prob(F-statistic) | 0.025491 | | |

Source:    Researcher's    Computations      using    E-Views    Statistical    Software    8.0,    2015


Appendix 24: Regression Analysis on Oil and Gas Sector Using Model ……………(4)

Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 18:08
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 2.379577 | 2.520293 | 0.944167 | 0.3538 |
| SCE | -18.46083 | 54.33855 | -0.339737 | 0.7368 |
| CEE | -19.34400 | 3.650763 | -5.298618 | 0.0000 |
| C | 62.04959 | 30.59374 | 2.028180 | 0.0529 |

| R-squared | 0.588582 | Mean dependent var | 33.88833 |
|---|---|---|---|
| Adjusted R-squared | 0.541111 | S.D. dependent var | 19.00817 |
| S.E. of regression | 12.87639 | Akaike info criterion | 8.072234 |
| Sum squared resid | 4310.839 | Schwarz criterion | 8.259061 |
| Log likelihood | -117.0835 | Hannan-Quinn criter. | 8.132002 |
| F-statistic | 12.39870 | Durbin-Watson stat | 1.718834 |
| Prob(F-statistic) | 0.000032 | | |

Source:    Researcher's    Computations      using    E-Views    Statistical    Software    8.0,    2015

Appendix 25: Regression Analysis on Oil  & Gas Sector Using Model ……………(5)

Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 18:10
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 40.32443 | 29.36875 | 1.373039 | 0.1815 |
| SCE | -203.9155 | 633.2024 | -0.322039 | 0.7500 |
| CEE | -124.2630 | 42.54202 | -2.920947 | 0.0071 |
| C | 555.3525 | 356.5062 | 1.557764 | 0.1314 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.416906 | Mean dependent var | | 420.0010 |
| Adjusted R-squared | 0.349625 | S.D. dependent var | | 186.0574 |
| S.E. of regression | 150.0475 | Akaike info criterion | | 12.98335 |
| Sum squared resid | 585370.4 | Schwarz criterion | | 13.17017 |
| Log likelihood | -190.7502 | Hannan-Quinn criter. | | 13.04311 |
| F-statistic | 6.196562 | Durbin-Watson stat | | 0.891511 |
| Prob(F-statistic) | 0.002550 | | | |

Appendix 26: Regression Analysis on Oil and Gas Sector Using Model ……………(6)

Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 18:12
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -8.288547 | 9.229763 | -0.898024 | 0.3774 |
| SCE | 76.50005 | 198.9975 | 0.384427 | 0.7038 |
| CEE | 75.94655 | 13.36975 | 5.680477 | 0.0000 |
| C | 27.83781 | 112.0397 | 0.248464 | 0.8057 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.613598 | Mean dependent var | | 145.9093 |
| Adjusted R-squared | 0.569013 | S.D. dependent var | | 71.82928 |
| S.E. of regression | 47.15566 | Akaike info criterion | | 10.66835 |
| Sum squared resid | 57815.06 | Schwarz criterion | | 10.85518 |
| Log likelihood | -156.0253 | Hannan-Quinn criter. | | 10.72812 |
| F-statistic | 13.76245 | Durbin-Watson stat | | 1.543706 |
| Prob(F-statistic) | 0.000014 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 27: Regression Analysis on Food & Beverage Sector Using Model ……………(1)

Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 05:19
Sample: 0001 0030
Included observations:30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 16.56334 | 6.906460 | 2.398238 | 0.0218 |
| SCE | 30.32086 | 15.69515 | 1.931862 | 0.0613 |
| CEE | -4.511992 | 4.701347 | -0.959723 | 0.3436 |
| C | -35.26650 | 11.41688 | -3.088979 | 0.0039 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.418583 | Mean dependent var | | 13.72658 |
| Adjusted R-squared | 0.370132 | S.D. dependent var | | 20.73283 |
| S.E. of regression | 16.45445 | Akaike info criterion | | 8.533708 |
| Sum squared resid | 9746.959 | Schwarz criterion | | 8.702596 |
| Log likelihood | -166.6742 | Hannan-Quinn criter. | | 8.594773 |
| F-statistic | 8.639243 | Durbin-Watson stat | | 1.985381 |
| Prob(F-statistic) | 0.000189 | | | |

Source:   Researcher's   Computations   using   E-Views   Statistical   Software   8.0,   2015

Appendix 28: Regression Analysis on Food & Beverage Sector Using Model ……………(2)

Dependent Variable: MBV
Method: Least Squares
Date: 04/30/15   Time: 18:14
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 7.637890 | 2.922575 | 2.613411 | 0.0130 |
| SCE | -3.339003 | 6.641645 | -0.502737 | 0.6182 |
| CEE | 6.293055 | 1.989448 | 3.163217 | 0.0032 |
| C | -15.81403 | 4.831229 | -3.273294 | 0.0024 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.493475 | Mean dependent var | | 7.772550 |
| Adjusted R-squared | 0.451265 | S.D. dependent var | | 9.399660 |
| S.E. of regression | 6.962953 | Akaike info criterion | | 6.813724 |
| Sum squared resid | 1745.378 | Schwarz criterion | | 6.982612 |
| Log likelihood | -132.2745 | Hannan-Quinn criter. | | 6.874789 |
| F-statistic | 11.69085 | Durbin-Watson stat | | 1.620274 |
| Prob(F-statistic) | 0.000017 | | | |

Source:   Researcher's   Computations   using   E-Views   Statistical   Software   8.0,   2015

Appendix 29: Regression Analysis on Food and  Beverage Sector Using Model ……………(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 18:17
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 10.57583 | 2.047631 | 5.164912 | 0.0000 |
| SCE | -4.182532 | 4.653307 | -0.898830 | 0.3747 |
| CEE | 0.920758 | 1.393858 | 0.660582 | 0.5131 |
| C | -17.51119 | 3.384883 | -5.173351 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.582260 | Mean dependent var | 5.683750 |
| Adjusted R-squared | 0.547448 | S.D. dependent var | 7.251792 |
| S.E. of regression | 4.878424 | Akaike info criterion | 6.102161 |
| Sum squared resid | 856.7646 | Schwarz criterion | 6.271049 |
| Log likelihood | -118.0432 | Hannan-Quinn criter. | 6.163225 |
| F-statistic | 16.72599 | Durbin-Watson stat | 1.268094 |
| Prob(F-statistic) | 0.000001 | | |

Source:    Researcher's    Computations        using    E-Views    Statistical    Software    8.0,    2015


Appendix 30: Regression Analysis on Food & Beverage Sector Using Model ……………(4)
Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 18:19
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 9.245354 | 3.933208 | 2.350588 | 0.0243 |
| SCE | -16.64120 | 8.938341 | -1.861777 | 0.0708 |
| CEE | -3.027863 | 2.677403 | -1.130895 | 0.2656 |
| C | 8.151563 | 6.501878 | 1.253724 | 0.2180 |

| | | | |
|---|---|---|---|
| R-squared | 0.139582 | Mean dependent var | 16.58383 |
| Adjusted R-squared | 0.067880 | S.D. dependent var | 9.705969 |
| S.E. of regression | 9.370758 | Akaike info criterion | 7.407705 |
| Sum squared resid | 3161.200 | Schwarz criterion | 7.576592 |
| Log likelihood | -144.1541 | Hannan-Quinn criter. | 7.468769 |
| F-statistic | 1.946707 | Durbin-Watson stat | 1.165824 |
| Prob(F-statistic) | 0.139509 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

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Appendix 31: Regression Analysis on Food and Beverage Sector Using Model ……………(5)
Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 18:21
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 34.47853 | 12.77973 | 2.697909 | 0.0106 |
| SCE | -6.162999 | 29.04234 | -0.212207 | 0.8331 |
| CEE | 14.30085 | 8.699381 | 1.643893 | 0.1089 |
| C | -34.85358 | 21.12581 | -1.649810 | 0.1077 |

| | | | |
|---|---|---|---|
| R-squared | 0.392767 | Mean dependent var | 58.90500 |
| Adjusted R-squared | 0.342164 | S.D. dependent var | 37.53968 |
| S.E. of regression | 30.44734 | Akaike info criterion | 9.764514 |
| Sum squared resid | 33373.46 | Schwarz criterion | 9.933402 |
| Log likelihood | -191.2903 | Hannan-Quinn criter. | 9.825578 |
| F-statistic | 7.761768 | Durbin-Watson stat | 0.932436 |
| Prob(F-statistic) | 0.000401 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 32: Regression Analysis on Food and Beverage
Sector using Model ……………(6)
Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 18:23
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 305.2802 | 76.04555 | 4.014439 | 0.0003 |
| SCE | -222.9452 | 172.8159 | -1.290073 | 0.2053 |
| CEE | -5.706745 | 51.76552 | -0.110242 | 0.9128 |
| C | -444.8385 | 125.7088 | -3.538643 | 0.0011 |

| | | | |
|---|---|---|---|
| R-squared | 0.390141 | Mean dependent var | 128.8315 |
| Adjusted R-squared | 0.339320 | S.D. dependent var | 222.8979 |
| S.E. of regression | 181.1764 | Akaike info criterion | 13.33146 |
| Sum squared resid | 1181696. | Schwarz criterion | 13.50035 |
| Log likelihood | -262.6292 | Hannan-Quinn criter. | 13.39252 |
| F-statistic | 7.676692 | Durbin-Watson stat | 1.599353 |
| Prob(F-statistic) | 0.000432 | | |

Appendix 33: Regression Analysis on P & H C Sector Using Model ……………(6)

Dependent Variable: P/E
Method: Least Squares
Date: 05/13/15   Time: 03:43
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -12.73977 | 7.890667 | -1.614537 | 0.1185 |
| SCE | 10.80871 | 51.73378 | 0.208929 | 0.8361 |
| CEE | 12.77116 | 5.167364 | 2.471503 | 0.0203 |
| C | 41.01111 | 17.51700 | 2.341218 | 0.0272 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.383841 | Mean dependent var | | 22.22077 |
| Adjusted R-squared | 0.312746 | S.D. dependent var | | 15.67662 |
| S.E. of regression | 12.99604 | Akaike info criterion | | 8.090733 |
| Sum squared resid | 4391.325 | Schwarz criterion | | 8.277559 |
| Log likelihood | -117.3610 | Hannan-Quinn criter. | | 8.150500 |
| F-statistic | 5.398974 | Durbin-Watson stat | | 2.680663 |
| Prob(F-statistic) | 0.005045 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 34: Regression Analysis on Personal & Household Consumables Sector Using Model ……………(2)

Dependent Variable: M/BV
Method: Least Squares
Date: 05/13/15   Time: 03:46
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.281289 | 2.276285 | 0.123574 | 0.9026 |
| SCE | -8.995973 | 14.92407 | -0.602783 | 0.5519 |
| CEE | 9.030109 | 1.490672 | 6.057744 | 0.0000 |
| C | 3.135099 | 5.053272 | 0.620410 | 0.5404 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.603672 | Mean dependent var | | 5.682333 |
| Adjusted R-squared | 0.557942 | S.D. dependent var | | 5.638769 |
| S.E. of regression | 3.749075 | Akaike info criterion | | 5.604461 |
| Sum squared resid | 365.4446 | Schwarz criterion | | 5.791287 |
| Log likelihood | -80.06692 | Hannan-Quinn criter. | | 5.664228 |
| F-statistic | 13.20074 | Durbin-Watson stat | | 1.808002 |
| Prob(F-statistic) | 0.000020 | | | |

Source:    Researcher's    Computations        using    E-Views    Statistical    Software    8.0,    2015

Appendix 35: Regression Analysis on P & H Consumables Sector
Using Model ……………(3)
Dependent Variable: EPS
Method: Least Squares
Date: 05/13/15   Time: 03:51
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -0.264768 | 0.292195 | -0.906136 | 0.3732 |
| SCE | 3.308668 | 1.915725 | 1.727110 | 0.0960 |
| CEE | -0.158342 | 0.191350 | -0.827500 | 0.4155 |
| C | -0.326717 | 0.648662 | -0.503678 | 0.6187 |

| | | | |
|---|---|---|---|
| R-squared | 0.187999 | Mean dependent var | 0.879333 |
| Adjusted R-squared | 0.094307 | S.D. dependent var | 0.505684 |
| S.E. of regression | 0.481249 | Akaike info criterion | 1.498703 |
| Sum squared resid | 6.021624 | Schwarz criterion | 1.685530 |
| Log likelihood | -18.48055 | Hannan-Quinn criter. | 1.558471 |
| F-statistic | 2.006560 | Durbin-Watson stat | 0.566310 |
| Prob(F-statistic) | 0.137727 | | |

Source:    Researcher's    Computations       using    E-Views    Statistical    Software    8.0,    2015

Appendix 36: Regression Analysis on P & HC Sector Using Model ……………(4)
Dependent Variable: NAPS
Method: Least Squares
Date: 05/13/15   Time: 03:48
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -3.624327 | 2.533617 | -1.430495 | 0.1645 |
| SCE | 11.47441 | 16.61122 | 0.690763 | 0.4958 |
| CEE | -5.176665 | 1.659191 | -3.119994 | 0.0044 |
| C | 13.01421 | 5.624539 | 2.313828 | 0.0288 |

| | | | |
|---|---|---|---|
| R-squared | 0.346557 | Mean dependent var | 5.723333 |
| Adjusted R-squared | 0.271160 | S.D. dependent var | 4.887899 |
| S.E. of regression | 4.172904 | Akaike info criterion | 5.818667 |
| Sum squared resid | 452.7412 | Schwarz criterion | 6.005493 |
| Log likelihood | -83.28001 | Hannan-Quinn criter. | 5.878434 |
| F-statistic | 4.596415 | Durbin-Watson stat | 1.419450 |
| Prob(F-statistic) | 0.010376 | | |

Source:    Researcher's    Computations       using    E-Views    Statistical    Software    8.0,    2015

Appendix 37: Regression Analysis on P&HC Sector Using Model ……………(5)
Dependent Variable: GRPS
Method: Least Squares
Date: 05/13/15   Time: 03:55
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.157858 | 2.779345 | 0.056797 | 0.9551 |
| SCE | 4.378766 | 18.22229 | 0.240297 | 0.8120 |
| CEE | -6.247896 | 1.820111 | -3.432701 | 0.0020 |
| C | 15.99633 | 6.170047 | 2.592578 | 0.0154 |

| | | | |
|---|---|---|---|
| R-squared | 0.327695 | Mean dependent var | 14.06900 |
| Adjusted R-squared | 0.250121 | S.D. dependent var | 5.286210 |
| S.E. of regression | 4.577622 | Akaike info criterion | 6.003802 |
| Sum squared resid | 544.8201 | Schwarz criterion | 6.190628 |
| Log likelihood | -86.05703 | Hannan-Quinn criter. | 6.063569 |
| F-statistic | 4.224309 | Durbin-Watson stat | 0.580798 |
| Prob(F-statistic) | 0.014680 | | |

Source:   Researcher's   Computations   using   E-Views   Statistical   Software   8.0,   2015


Appendix 38: Regression Analysis on P &H/C Sector using Model (6)
Dependent Variable: SP
Method: Least Squares
Date: 05/13/15   Time: 03:58
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -7.678646 | 8.093135 | -0.948785 | 0.3515 |
| SCE | 31.82429 | 53.06122 | 0.599766 | 0.5539 |
| CEE | 6.015350 | 5.299954 | 1.134981 | 0.2667 |
| C | 15.84642 | 17.96647 | 0.882000 | 0.3859 |

| | | | |
|---|---|---|---|
| R-squared | 0.083706 | Mean dependent var | 19.09933 |
| Adjusted R-squared | -0.022020 | S.D. dependent var | 13.18513 |
| S.E. of regression | 13.32951 | Akaike info criterion | 8.141404 |
| Sum squared resid | 4619.572 | Schwarz criterion | 8.328230 |
| Log likelihood | -118.1211 | Hannan-Quinn criter. | 8.201171 |
| F-statistic | 0.791728 | Durbin-Watson stat | 0.800759 |
| Prob(F-statistic) | 0.509542 | | |

Source:   Researcher's   Computations   using   E-Views   Statistical   Software   8.0,   2015

Appendix 39: Regression Analysis on the Brewery Sector Using Model ……………(1)

Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 04:50
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -3.493126 | 5.269916 | -0.662843 | 0.5133 |
| SCE | 11.22463 | 21.14179 | 0.530922 | 0.6000 |
| CEE | 21.21259 | 11.65505 | 1.820034 | 0.0803 |
| C | 4.748889 | 17.32108 | 0.274168 | 0.7861 |

| | | | |
|---|---|---|---|
| R-squared | 0.146753 | Mean dependent var | 19.97130 |
| Adjusted R-squared | 0.048302 | S.D. dependent var | 34.91390 |
| S.E. of regression | 34.06026 | Akaike info criterion | 10.01771 |
| Sum squared resid | 30162.64 | Schwarz criterion | 10.20453 |
| Log likelihood | -146.2656 | Hannan-Quinn criter. | 10.07747 |
| F-statistic | 1.490613 | Durbin-Watson stat | 1.738995 |
| Prob(F-statistic) | 0.240319 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 40: Regression Analysis on the Brewery Sector Using Model ……………(2)

Dependent Variable: MBV
Method: Least Squares
Date: 04/30/15   Time: 13:49
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 3.659437 | 4.957694 | 0.738133 | 0.4670 |
| SCE | -19.89840 | 19.88922 | -1.000462 | 0.3263 |
| CEE | 16.73596 | 10.96453 | 1.526373 | 0.1390 |
| C | -18.90217 | 16.29487 | -1.160007 | 0.2566 |

| | | | |
|---|---|---|---|
| R-squared | 0.117124 | Mean dependent var | 2.093067 |
| Adjusted R-squared | 0.015254 | S.D. dependent var | 32.28954 |
| S.E. of regression | 32.04232 | Akaike info criterion | 9.895558 |
| Sum squared resid | 26694.47 | Schwarz criterion | 10.08238 |
| Log likelihood | -144.4334 | Hannan-Quinn criter. | 9.955325 |
| F-statistic | 1.149740 | Durbin-Watson stat | 2.050800 |
| Prob(F-statistic) | 0.347712 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 41: Regression Analysis on the Brewery Sector Using Model ……………(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 13:52
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 2.019169 | 0.372309 | 5.423372 | 0.0000 |
| SCE | -1.486808 | 1.493624 | -0.995437 | 0.3287 |
| CEE | -0.519674 | 0.823405 | -0.631127 | 0.5335 |
| C | -3.340496 | 1.223699 | -2.729835 | 0.0112 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.639238 | Mean dependent var | | 3.672333 |
| Adjusted R-squared | 0.597612 | S.D. dependent var | | 3.793368 |
| S.E. of regression | 2.406288 | Akaike info criterion | | 4.717613 |
| Sum squared resid | 150.5457 | Schwarz criterion | | 4.904439 |
| Log likelihood | -66.76420 | Hannan-Quinn criter. | | 4.777380 |
| F-statistic | 15.35657 | Durbin-Watson stat | | 0.452574 |
| Prob(F-statistic) | 0.000006 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 42: Regression Analysis on the Brewery Sector Using Model ……………(4)

Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 13:55
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 5.739395 | 1.038058 | 5.528973 | 0.0000 |
| SCE | -4.952485 | 4.164469 | -1.189224 | 0.2451 |
| CEE | -3.371333 | 2.295790 | -1.468485 | 0.1540 |
| C | -7.754107 | 3.411874 | -2.272683 | 0.0315 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.621023 | Mean dependent var | | 9.679333 |
| Adjusted R-squared | 0.577295 | S.D. dependent var | | 10.31923 |
| S.E. of regression | 6.709126 | Akaike info criterion | | 6.768380 |
| Sum squared resid | 1170.322 | Schwarz criterion | | 6.955207 |
| Log likelihood | -97.52570 | Hannan-Quinn criter. | | 6.828148 |
| F-statistic | 14.20191 | Durbin-Watson stat | | 0.821498 |
| Prob(F-statistic) | 0.000011 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 43: Regression Analysis on the Brewery  Sector Using Model ……………(5)

Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 13:57
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 14.01071 | 2.887208 | 4.852683 | 0.0000 |
| SCE | -13.77278 | 11.58287 | -1.189065 | 0.2452 |
| CEE | -5.503802 | 6.385405 | -0.861935 | 0.3966 |
| C | -14.87171 | 9.489632 | -1.567154 | 0.1292 |

| | | | |
|---|---|---|---|
| R-squared | 0.557366 | Mean dependent var | 29.57223 |
| Adjusted R-squared | 0.506293 | S.D. dependent var | 26.55754 |
| S.E. of regression | 18.66046 | Akaike info criterion | 8.814256 |
| Sum squared resid | 9053.531 | Schwarz criterion | 9.001083 |
| Log likelihood | -128.2138 | Hannan-Quinn criter. | 8.874024 |
| F-statistic | 10.91311 | Durbin-Watson stat | 0.706990 |
| Prob(F-statistic) | 0.000080 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015


Appendix 44: Regression Analysis on the Brewery  Sector Using Model ……………(6)

Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 14:02
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 37.44913 | 9.544729 | 3.923541 | 0.0006 |
| SCE | -25.21416 | 38.29143 | -0.658480 | 0.5160 |
| CEE | -16.13675 | 21.10931 | -0.764438 | 0.4515 |
| C | -42.57255 | 31.37147 | -1.357047 | 0.1864 |

| | | | |
|---|---|---|---|
| R-squared | 0.475970 | Mean dependent var | 81.96067 |
| Adjusted R-squared | 0.415505 | S.D. dependent var | 80.68961 |
| S.E. of regression | 61.68902 | Akaike info criterion | 11.20565 |
| Sum squared resid | 98943.92 | Schwarz criterion | 11.39248 |
| Log likelihood | -164.0848 | Hannan-Quinn criter. | 11.26542 |
| F-statistic | 7.871837 | Durbin-Watson stat | 0.681711 |
| Prob(F-statistic) | 0.000673 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 45: Regression Analysis on Conglomerates Sector Using Model ……………(1)
Dependent Variable: P/E
Method: Least Squares
Date: 04/30/15   Time: 04:59
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -15.75026 | 12.34059 | -1.276297 | 0.2131 |
| SCE | 23.59057 | 71.48181 | 0.330022 | 0.7440 |
| CEE | 76.09114 | 65.07865 | 1.169218 | 0.2529 |
| C | 30.67160 | 28.01358 | 1.094883 | 0.2836 |
| R-squared | 0.100290 | Mean dependent var | | 27.41117 |
| Adjusted R-squared | -0.003523 | S.D. dependent var | | 35.52608 |
| S.E. of regression | 35.58861 | Akaike info criterion | | 10.10549 |
| Sum squared resid | 32930.28 | Schwarz criterion | | 10.29232 |
| Log likelihood | -147.5824 | Hannan-Quinn criter. | | 10.16526 |
| F-statistic | 0.966062 | Durbin-Watson stat | | 1.122794 |
| Prob(F-statistic) | 0.423618 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015


Appendix 46: Regression Analysis on Conglomerates Sector Using Model ……………(2)
Dependent Variable: M/BV
Method: Least Squares
Date: 04/30/15   Time: 14:12
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.281289 | 2.276285 | 0.123574 | 0.9026 |
| SCE | -8.995973 | 14.92407 | -0.602783 | 0.5519 |
| CEE | 9.030109 | 1.490672 | 6.057744 | 0.0000 |
| C | 3.135099 | 5.053272 | 0.620410 | 0.5404 |
| R-squared | 0.603672 | Mean dependent var | | 5.682333 |
| Adjusted R-squared | 0.557942 | S.D. dependent var | | 5.638769 |
| S.E. of regression | 3.749075 | Akaike info criterion | | 5.604461 |
| Sum squared resid | 365.4446 | Schwarz criterion | | 5.791287 |
| Log likelihood | -80.06692 | Hannan-Quinn criter. | | 5.664228 |
| F-statistic | 13.20074 | Durbin-Watson stat | | 1.808002 |
| Prob(F-statistic) | 0.000020 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015

Appendix 47: Regression Analysis on Conglomerates Sector Using Model ……………(3)
Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 14:15
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -0.264768 | 0.292195 | -0.906136 | 0.3732 |
| SCE | 3.308668 | 1.915725 | 1.727110 | 0.0960 |
| CEE | -0.158342 | 0.191350 | -0.827500 | 0.4155 |
| C | -0.326717 | 0.648662 | -0.503678 | 0.6187 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.187999 | Mean dependent var | | 0.879333 |
| Adjusted R-squared | 0.094307 | S.D. dependent var | | 0.505684 |
| S.E. of regression | 0.481249 | Akaike info criterion | | 1.498703 |
| Sum squared resid | 6.021624 | Schwarz criterion | | 1.685530 |
| Log likelihood | -18.48055 | Hannan-Quinn criter. | | 1.558471 |
| F-statistic | 2.006560 | Durbin-Watson stat | | 0.566310 |
| Prob(F-statistic) | 0.137727 | | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015


Appendix 48: Regression Analysis on Conglomerates Sector Using Model ……………(4)
Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 14:18
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -3.624327 | 2.533617 | -1.430495 | 0.1645 |
| SCE | 11.47441 | 16.61122 | 0.690763 | 0.4958 |
| CEE | -5.176665 | 1.659191 | -3.119994 | 0.0044 |
| C | 13.01421 | 5.624539 | 2.313828 | 0.0288 |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.346557 | Mean dependent var | | 5.723333 |
| Adjusted R-squared | 0.271160 | S.D. dependent var | | 4.887899 |
| S.E. of regression | 4.172904 | Akaike info criterion | | 5.818667 |
| Sum squared resid | 452.7412 | Schwarz criterion | | 6.005493 |
| Log likelihood | -83.28001 | Hannan-Quinn criter. | | 5.878434 |
| F-statistic | 4.596415 | Durbin-Watson stat | | 1.419450 |
| Prob(F-statistic) | 0.010376 | | | |

Source: Researcher's Computations  Using E-Views Statistical Software 8.0, 2015

Appendix 49: Regression Analysis on Conglomerates Sector Using Model …………….(5)
Dependent Variable: GRPS
Method: Least Squares
Date: 04/30/15   Time: 14:22
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.157858 | 2.779345 | 0.056797 | 0.9551 |
| SCE | 4.378766 | 18.22229 | 0.240297 | 0.8120 |
| CEE | -6.247896 | 1.820111 | -3.432701 | 0.0020 |
| C | 15.99633 | 6.170047 | 2.592578 | 0.0154 |

| | | | |
|---|---|---|---|
| R-squared | 0.327695 | Mean dependent var | 14.06900 |
| Adjusted R-squared | 0.250121 | S.D. dependent var | 5.286210 |
| S.E. of regression | 4.577622 | Akaike info criterion | 6.003802 |
| Sum squared resid | 544.8201 | Schwarz criterion | 6.190628 |
| Log likelihood | -86.05703 | Hannan-Quinn criter. | 6.063569 |
| F-statistic | 4.224309 | Durbin-Watson stat | 0.580798 |
| Prob(F-statistic) | 0.014680 | | |

Source: Researcher's Computations  using E-Views Statistical Software 8.0, 2015


Appendix 50: Regression Analysis on Conglomerates Sector Using Model …………….(6)
Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 14:31
Sample: 0001 0030
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | -7.678646 | 8.093135 | -0.948785 | 0.3515 |
| SCE | 31.82429 | 53.06122 | 0.599766 | 0.5539 |
| CEE | 6.015350 | 5.299954 | 1.134981 | 0.2667 |
| C | 15.84642 | 17.96647 | 0.882000 | 0.3859 |

| | | | |
|---|---|---|---|
| R-squared | 0.083706 | Mean dependent var | 19.09933 |
| Adjusted R-squared | -0.022020 | S.D. dependent var | 13.18513 |
| S.E. of regression | 13.32951 | Akaike info criterion | 8.141404 |
| Sum squared resid | 4619.572 | Schwarz criterion | 8.328230 |
| Log likelihood | -118.1211 | Hannan-Quinn criter. | 8.201171 |
| F-statistic | 0.791728 | Durbin-Watson stat | 0.800759 |
| Prob(F-statistic) | 0.509542 | | |

Source: Researcher's Computations Using E-Views Statistical Software 8.0, 2015

Appendix 51: Descriptive Statistics of Operational Variables used for Healthcare Sector

| | P/E | M/BV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 15.808300 | 1.685800 | 3.303300 | 0.183000 | 10.147000 | 9.748800 | 2.399000 | 0.407040 | 0.510700 |
| Median | 10.331500 | 1.861500 | 3.745000 | 0.265000 | 8.727500 | 5.100000 | 2.596600 | 0.592000 | 0.553500 |
| Maximum | 131.5400 | 6.466000 | 12.9000 | 7.45000 | 30.50000 | 68.00000 | 3.733000 | 0.767000 | 4.99130 |
| Minimun | -21.500000 | -8.160000 | -11.160000 | -4.860000 | 3.219000 | 0.670000 | -0.388000 | -1.574000 | -3.611000 |
| Std. Dev. | 25.343750 | 2.901273 | 4.787702 | 2.086478 | 5.890047 | 12.95902 | 0.973207 | 0.489272 | 1.345998 |
| Skewness | 2.682133 | -1.532153 | -1.173450 | 0.345615 | 1.824017 | 2.920403 | -0.644174 | -2.500923 | 0.808604 |
| Kurtosis | 12.333560 | 6.438481 | 5.489543 | 6.212924 | 6.191585 | 12.37014 | 2.973060 | 9.173883 | 8.985994 |
| Jarque-Bera | 193.151200 | 35.355200 | 19.509600 | 18.001140 | 39.15728 | 203.190900 | 2.767610 | 105.2255 | 64.07914 |
| Probability | 0.000000 | 0.000000 | 0.000058 | 0.000123 | 0.000000 | 0.000000 | 0.250623 | 0.000000 | 0.000000 |
| Sum | 632.333000 | 67.431000 | 132.130000 | 7.320000 | 405.860000 | 389.950000 | 95.865300 | 16.281700 | 20.429300 |
| Sum Sq. Dev. | 25049.92 | 328.2779 | 893.9615 | 169.7822 | 1353.014 | 6549.516 | 36.93816 | 9.336102 | 70.65673 |
| Observations | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

Source: Researcher's Computations using E-Views Statistical Software 8.0, 2015
Where P/E = Price Earnings Ratio; M/BV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share; SP= Share Price; HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 52: Descriptive Statistics of Operational Variables of ICT Sector

| | P/E | M/BV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 1.448586 | 4.259276 | 6.054828 | -3.603448 | 10.54869 | 2.565172 | 4.346686 | 0.043769 | 0.304810 |
| Median | 0.221000 | 1.030000 | 1.882000 | -0.280000 | 3.380000 | 2.890000 | 2.009400 | 0.607300 | 0.197000 |
| Maximum | 14.11000 | 63.60000 | 43.85000 | 21.36000 | 121.1000 | 4.900000 | 28.19240 | 0.964500 | 8.010000 |
| Minimum | -5.92000 | -8.890000 | -0.54400 | -71.74000 | 0.460000 | 0.500000 | -2.546800 | -11.23000 | -3.532000 |
| Std. Dev. | 4.281679 | 13.47840 | 10.52367 | 17.20769 | 23.49701 | 1.035276 | 6.198808 | 2.224969 | 1.745090 |
| Skewness | 1.680234 | 3.366274 | 2.200573 | -2.612070 | 3.875303 | 0.066925 | 2.291953 | -4.717728 | 2.606402 |
| Kurtosis | 5.620006 | 14.62837 | 7.191996 | 10.43598 | 18.27102 | 2.439667 | 8.729907 | 24.39783 | 15.12561 |
| Jarque-Bera | 21.93992 | 218.16015 | 44.63935 | 99.79074 | 354.3753 | 0.401033 | 65.06155 | 660.8315 | 210.4962 |
| Probability | 0.000017 | 0.000000 | 0.000000 | 0.000000 | 0.000000 | 0.818308 | 0.000000 | 0.000000 | 0.000000 |
| Sum | 42.00900 | 123.5190 | 175.5900 | -104.5000 | 305.9120 | 74.39000 | 126.0539 | 1.269300 | 8.839500 |
| Sum Sq. Dev. | 513.3177 | 5086.682 | 3100.934 | 8290.926 | 15459.07 | 30.01032 | 1075.906 | 138.6137 | 85.26946 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

Source: Researcher's computations with the aid of E-Views Statistical Software, 2015

Where P/ER= Price - Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price and ICT= Information and Communication Technology.

Appendix 53: Descriptive Statistics of Operational Variable on Oil and Gas Sector

| | PER | MBV | NAPS | EPS | GR | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 18.78540 | 8.823767 | 33.88833 | 8.863333 | 420.001 | 145.9093 | 4.321763 | 0.734333 | 1.286643 |
| Median | 14.27750 | 6.592000 | 31.41000 | 9.340000 | 419.91 | 145.0000 | 3.666150 | 0.724500 | 1.378350 |
| Maximum | 76.00000 | 43.59000 | 74.92000 | 16.01000 | 750.20 | 331.190 | 10.6742 | 0.941000 | 2.958000 |
| Minimum | 1.284000 | 0.541000 | 9.350000 | 1.480000 | 193.62 | 22.00000 | 2.295000 | 0.564000 | 0.239700 |
| Std. Dev. | 16.44610 | 10.22541 | 19.00817 | 3.966108 | 186.0574 | 71.82928 | 2.006309 | 0.091038 | 0.686393 |
| Skewness | 1.879894 | 1.984506 | 0.482167 | -0.201182 | 0.288962 | 0.447593 | 1.882942 | 0.548411 | 0.394233 |
| Kurtosis | 6.535447 | 6.679996 | 2.261699 | 2.310763 | 1.863423 | 3.514231 | 5.938231 | 2.716972 | 2.778624 |
| Jarque-Bera | 33.29424 | 36.61928 | 1.843784 | 0.796182 | 2.032252 | 1.332239 | 28.51885 | 1.603904 | 0.838357 |
| Probability | 0.000000 | 0.000000 | 0.397766 | 0.671601 | 0.361995 | 0.513698 | 0.000001 | 0.448453 | 0.657587 |
| Sum | 563.5620 | 264.7130 | 1016.650 | 265.9000 | 12600.03 | 4377.280 | 129.6529 | 22.03000 | 38.59930 |
| Sum Sq. Dev. | 7843.751 | 3032.210 | 10478.01 | 456.1705 | 1003903. | 149623.9 | 116.7331 | 0.240350 | 13.66293 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

Source: Researcher's Computations using E-Views Statistical Software, 2015

Where P/ER= Price - Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price; HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 54: Descriptive Statistics of Operational Variables of Personal/Household Consumables Sector

| | P/ER | M/BV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 22.22077 | 5.682333 | 5.723333 | 0.879333 | 14.06900 | 19.09933 | 2.834073 | 0.630643 | 0.822060 |
| Median | 19.23150 | 2.708000 | 2.830000 | 0.770000 | 14.5700 | 18.50000 | 2.628750 | 0.624450 | 0.694450 |
| Maximum | 78.03600 | 21.45100 | 17.70000 | 1.670000 | 25.49000 | 53.80000 | 4.271300 | 0.765900 | 1.682800 |
| Minimum | 5.3040 | 0.5860 | 1.040000 | -0.43000 | 4.960000 | 3.5000 | 1.32220 | 0.2437 | 0.223 |
| Std. Dev. | 15.67662 | 5.638769 | 4.887899 | 0.505684 | 5.286210 | 13.18513 | 0.666786 | 0.101975 | 0.470612 |
| Skewness | 1.7438 | 1.3276 | 0.761670 | -0.32047 | -0.000994 | 0.6972 | 0.18819 | -1.8207 | 0.383 |
| Kurtosis | 6.5529 | 3.716758 | 2.178559 | 2.691778 | 2.265726 | 3.046157 | 2.777286 | 7.986867 | 1.649673 |
| Jarque-Bera | 30.98291 | 9.454610 | 3.744162 | 0.632264 | 0.673953 | 2.433342 | 0.239088 | 47.66117 | 3.013029 |
| Probability | 0.0000 | 0.008850 | 0.153803 | 0.728963 | 0.713926 | 0.296215 | 0.887325 | 0.000000 | 0.221681 |
| Sum | 666.6230 | 170.4700 | 171.7000 | 26.38000 | 422.0700 | 572.9800 | 85.02220 | 18.919300 | 24.66180 |
| Sum Sq. Dev. | 7126.939 | 922.0759 | 692.8551 | 7.415787 | 810.3765 | 5041.585 | 12.89349 | 0.301570 | 6.422807 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

Source: Researcher's Computations using E-Views Statistical   Software, 2015

Where P/ER= Price - Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE: Human Capital Efficiency; SCE: Structural Capital Efficiency and CEE: Capital Employed Efficiency.

Appendix 55: Descriptive Statistics of Operational Variables of the Brewery Sector

| | PER | MBV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 19.97130 | 2.093067 | 9.679333 | 3.672333 | 29.57223 | 81.96067 | 4.212953 | 0.627470 | 1.079343 |
| Median | 18.90500 | 7.994500 | 5.935000 | 3.545000 | 21.45000 | 55.38500 | 4.543200 | 0.779850 | 1.168150 |
| Maximum | 163.6600 | 49.10000 | 30.57000 | 12.16000 | 83.84000 | 275.0000 | 6.854900 | 0.854100 | 2.217000 |
| Minimum | -23.82000 | -160.5000 | -2.550000 | -1.030000 | 0.882000 | 2.270000 | 0.399000 | -1.507000 | -1.470000 |
| Std. Dev. | 34.91390 | 32.28954 | 10.31923 | 3.793368 | 26.55754 | 80.68961 | 1.785323 | 0.446706 | 0.621982 |
| Skewness | 2.353653 | -4.368198 | 0.553168 | 0.511898 | 0.778928 | 0.877394 | -0.605287 | -3.856471 | -2.208056 |
| Kurtosis | 10.79319 | 23.10214 | 1.942440 | 2.101211 | 2.402102 | 2.816546 | 2.253357 | 18.69110 | 10.76017 |
| Jarque-Bera | 103.6157 | 600.5258 | 2.928017 | 2.319977 | 3.480496 | 3.891175 | 2.528709 | 382.1250 | 99.65282 |
| Probability | 0.000000 | 0.000000 | 0.231307 | 0.313490 | 0.175477 | 0.142903 | 0.282422 | 0.000000 | 0.000000 |
| Sum | 599.1390 | 62.79200 | 290.3800 | 110.1700 | 887.1670 | 2458.820 | 126.3886 | 18.82410 | 32.38030 |
| Sum Sq. Dev. | 35350.42 | 30235.82 | 3088.107 | 417.2995 | 20453.78 | 188813.6 | 92.43394 | 5.786833 | 11.21897 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

Source: Researcher's Computations using E Views 8.0 Software, 2015

Where: P/ER = Price Earnings Ratio; M/BV = Market/Book Value Ratio; EPS= Earnings per Share; NAPS= Net Assets per Share; GRPS= Gross Revenue per Share; SP= Share Price, HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

Appendix 56: Descriptive Statistics for Operational Variables of Conglomerates Sector

Source: Researcher's Computations using E-Views 8.0 Statistical   Software, 2015

Where P/ER= Price - Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share;

| | PER | MBV | NAPS | EPS | GRPS | SP | HCE | SCE | CEE |
|---|---|---|---|---|---|---|---|---|---|
| Mean | 27.79286 | 9.605552 | 8.851379 | 0.862069 | 28.62034 | 16.93828 | 3.006710 | 0.595997 | 0.392810 |
| Median | 16.31000 | 1.535000 | 2.030000 | 0.360000 | 31.3800 0 | 12.5400 0 | 3.084000 | 0.623300 | 0.389000 |
| Maximum | 176.8600 | 39.19000 | 37.3900 0 | 3.140000 | 79.4500 0 | 67.0000 0 | 5.004100 | 0.800200 | 0.616300 |
| Minimum | 4.452000 | 0.335000 | 0.320000 | 0.110000 | 2.980000 | 0.650000 | 1.838000 | 0.233000 | 0.148000 |
| Std. Dev. | 36.09225 | 13.03141 | 12.71506 | 0.926018 | 22.37971 | 16.74995 | 0.840276 | 0.158006 | 0.124023 |
| Skewness | 2.845290 | 1.102732 | 1.467419 | 1.304194 | 0.569909 | 1.247206 | 0.453707 | -0.866778 | -0.000647 |
| Kurtosis | 11.38130 | 2.593586 | 3.546991 | 3.252612 | 2.580227 | 4.170955 | 2.447764 | 2.843383 | 2.092012 |
| Jarque-Bera | 124.0100 | 6.077007 | 10.7692 3 | 8.298228 | 1.782771 | 9.175153 | 1.363443 | 3.660946 | 0.996202 |
| Probability | 0.000000 | 0.047907 | 0.004587 | 0.015778 | 0.410087 | 0.010177 | 0.505746 | 0.160338 | 0.607684 |
| Sum | 805.9930 | 278.5610 | 256.690 0 | 25.00000 | 829.9900 | 491.2100 | 87.19460 | 17.28390 | 11.39150 |
| Sum Sq. Dev. | 36474.22 | 4754.895 | 4526.837 | 24.01028 | 14023.84 | 7855.700 | 19.76977 | 0.699044 | 0.430690 |
| Observations | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE: Human Capital Efficiency; SCE: Structural Capital Efficiency and CEE: Capital Employed Efficiency.

**Appendix 57: Correlation Results:  Healthcare Sector**

| | P/ER | M/BV | EPS | NAPS | GRPS | SP |
|---|---|---|---|---|---|---|
| HCE | 0.341682 | 0.240194 | 0.544009 | 0.526571 | 0.375012 | 0.453443 |
| SCE | 0.290891 | 0.033009 | 0.540317 | 0.497852 | 0.300270 | 0.267104 |
| CEE | 0.226725 | -0.329946 | 0.336411 | 0.274516 | 0.082520 | -0.023609 |

Source: Researcher's Computations using E Views 8.0 Software, 2015

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Appendix 58: Correlation Results: ICT Sector

| P/E R | M/BV R | EPS | NAPS | GRPS | SP |
|---|---|---|---|---|---|
| HCE | 0.065298 | -0.07125 | 0.274188 | 0.394690 0.350701 | 0.233404 |
| SCE | 0.146000 | 0.070998 | 0.049051 | 0.099082 0.125455 | -0.149307 |
| CEE | -0.014967 | 0.19382 | 0.189755 | 0.074710 0.054498 | 0.007802 |

**Source: Researcher's Computations using E Views 8.0 Software, 2015**

Appendix 59: Correlation Results-  Oil and Gas Sector

| | P/E Ratio | M/BV | EPS | NAPS | GRPS | SP |
|---|---|---|---|---|---|---|
| HCE | -0.159862 | -0.148283 | -0.140444 | 0.338163 | 0.455588 | -0.317466 |
| SCE | 0.016083 | 0.055628 | -0.282224 | 0.209083 | 0.330462 | -0.186512 |
| CEE | 0.233219 | 0.639798 | 0.367325 | -0.747486 | -0.549217 | 0.769126 |

**Source: Researcher's Computations using E Views 8.0 Software, 2015**

Where: P/ER = Price Earnings Ratio; M/BV = Market/Book Value Ratio; EPS= Earnings per Share; NAPS= Net Assets per Share;  GRPS= Gross Revenue per Share; SP= Share Price, HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency.

**APPENDIX 60: Correlation Results: Food and Beverage Sector**

| | P/E | M/BV | EPS | NAPS | GRPS | SP |
|---|---|---|---|---|---|---|
| HCE | 0.578268 | 0.583878 | 0.752190 | 0.193320 | 0.586620 | 0.601578 |
| SCE | 0.570624 | 0.287005 | 0.395230 | -0.083966 | 0.329836 | 0.252729 |
| CEE | 0.120734 | 0.606641 | 0.412210 | -0.037835 | 0.458387 | 0.275866 |

**Source: Researcher's computations using E-Views 8.0 Software, 2015**

Appendix 61: Correlation Results: Personal/ Household Consumables Sector

| | P/E | M/BV | EPS | NAPS | GRPS | SP |
|---|---|---|---|---|---|---|
| HCE | -0.488764 | -0.129391 | 0.246605 | -0.269878 | 0.108361 | -0.175081 |
| SCE | -0.440181 | -0.191328 | 0.368752 | -0.160938 | 0.145065 | -0.115064 |
| CEE | 0.391099 | 0.765402 | -0.190386 | -0.504904 | -0.563229 | 0.205123 |

**Source: Researcher's Computations using E Views 8.0 Software, 2015**

Where: P/ER = Price Earnings Ratio; M/BV = Market/Book Value Ratio; EPS= Earnings per Share; NAPS= Net Assets per Share;  GRPS= Gross Revenue per Share; SP= Share Price, HCE= Human Capital Efficiency; SCE= Structural Capital Efficiency and CEE= Capital Employed Efficiency

**Appendix 62: Correlation Results:-   Brewery Sector**

|      | P/E Ratio | M/BV     | EPS      | NAPS     | GRPS     | SP       |
|------|-----------|----------|----------|----------|----------|----------|
| HCE  | 0.096372  | 0.147168 | 0.784355 | 0.745188 | 0.715002 | 0.670832 |
| SCE  | 0.186386  | 0.019584 | 0.478148 | 0.415941 | 0.395434 | 0.407063 |
| CEE  | 0.363062  | 0.287669 | 0.263162 | 0.146422 | 0.189781 | 0.185344 |

**Source: Researcher's Computations using E Views 8.0 Software, 2015**
Where P/ER= Price - Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE: Human Capital Efficiency; SCE: Structural Capital Efficiency and CEE: Capital Employed Efficiency.


**Appendix 63: Correlation Results:   Conglomerates Sector**

|      | P/E R     | M/BV      | EPS       | NAPS      | GRPS      | SP        |
|------|-----------|-----------|-----------|-----------|-----------|-----------|
| HCE  | -0.164085 | -0.129391 | 0.246605  | -0.269878 | 0.108361  | -0.175081 |
| SCE  | -0.022402 | -0.191328 | 0.368752  | -0.160938 | 0.145065  | -0.115064 |
| CEE  | 0.155660  | 0.765402  | -0.190386 | -0.504904 | -0.563229 | 0.205123  |

**Source: Researcher's Computations using E-Views 8.0 Statistical   Software, 2015**
Where P/ER= Price-Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAVPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE: Human Capital Efficiency; SCE: Structural Capital Efficiency and CEE: Capital Employed Efficiency.


**Pooled Data Analysis/ Results**

Appendix 64: Regression Analysis Model …………………………………………………….(1)

Dependent Variable: PER
Method: Least Squares
Date: 04/30/15   Time: 06:08
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|--------|
| HCE      | -0.042034   | 3.063330   | -0.013722   | 0.9891 |
| SCE      | 11.07855    | 10.56374   | 1.048734    | 0.2981 |
| CEE      | 4.830353    | 3.347309   | 1.443056    | 0.1537 |
| C        | 8.525769    | 7.775864   | 1.096440    | 0.2769 |

| | | | |
|----|----|----|----|
| R-squared          | 0.088925  | Mean dependent var    | 17.59246 |
| Adjusted R-squared | 0.047512  | S.D. dependent var    | 29.65928 |
| S.E. of regression | 28.94612  | Akaike info criterion | 9.624194 |
| Sum squared resid  | 55299.92  | Schwarz criterion     | 9.752680 |
| Log likelihood     | -332.8468 | Hannan-Quinn criter.  | 9.675230 |
| F-statistic        | 2.147298  | Durbin-Watson stat    | 2.157211 |
| Prob(F-statistic)  | 0.102611  |                       |          |

**Source:** Researcher's Computations using E-Views 8.0 Statistical   Software, 2015

Appendix 65: Regression Analysis:  Model ………………………………………………………(2)

Dependent Variable: MBV
Method: Least Squares
Date: 04/30/15   Time: 18:50
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 2.714133 | 2.246370 | 1.208231 | 0.2313 |
| SCE | -6.857940 | 7.746492 | -0.885296 | 0.3792 |
| CEE | 1.113886 | 2.454614 | 0.453793 | 0.6515 |
| C | -4.158202 | 5.702117 | -0.729238 | 0.4684 |

| | | | |
|---|---|---|---|
| R-squared | 0.027146 | Mean dependent var | 1.860329 |
| Adjusted R-squared | -0.017074 | S.D. dependent var | 21.04754 |
| S.E. of regression | 21.22647 | Akaike info criterion | 9.003820 |
| Sum squared resid | 29737.16 | Schwarz criterion | 9.132306 |
| Log likelihood | -311.1337 | Hannan-Quinn criter. | 9.054856 |
| F-statistic | 0.613882 | Durbin-Watson stat | 1.857567 |
| Prob(F-statistic) | 0.608415 | | |

Appendix 66: Regression Analysis:-  Model …………………………………………(3)

Dependent Variable: EPS
Method: Least Squares
Date: 04/30/15   Time: 18:53
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 1.773791 | 0.218840 | 8.105437 | 0.0000 |
| SCE | -0.932761 | 0.754657 | -1.236006 | 0.2208 |
| CEE | 0.286757 | 0.239127 | 1.199183 | 0.2347 |
| C | -3.702001 | 0.555496 | -6.664318 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.645364 | Mean dependent var | 1.678429 |
| Adjusted R-squared | 0.629244 | S.D. dependent var | 3.396084 |
| S.E. of regression | 2.067867 | Akaike info criterion | 4.346357 |
| Sum squared resid | 282.2208 | Schwarz criterion | 4.474843 |
| Log likelihood | -148.1225 | Hannan-Quinn criter. | 4.397393 |
| F-statistic | 40.03542 | Durbin-Watson stat | 1.009876 |
| Prob(F-statistic) | 0.000000 | | |

Source: Researcher's Computations using E-Views 8.0 Statistical  Software, 2015

**Appendix 67: Regression Analysis: - Model ………………………………………(4)**

Dependent Variable: NAPS
Method: Least Squares
Date: 04/30/15   Time: 18:57
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 4.251110 | 0.589494 | 7.211462 | 0.0000 |
| SCE | -2.655319 | 2.032839 | -1.306213 | 0.1960 |
| CEE | 0.128117 | 0.644141 | 0.198896 | 0.8430 |
| C | -6.226637 | 1.496353 | -4.161209 | 0.0001 |

| | | | |
|---|---|---|---|
| R-squared | 0.562335 | Mean dependent var | 6.035857 |
| Adjusted R-squared | 0.542441 | S.D. dependent var | 8.234781 |
| S.E. of regression | 5.570262 | Akaike info criterion | 6.328206 |
| Sum squared resid | 2047.836 | Schwarz criterion | 6.456692 |
| Log likelihood | -217.4872 | Hannan-Quinn criter. | 6.379242 |
| F-statistic | 28.26674 | Durbin-Watson stat | 0.927080 |
| Prob(F-statistic) | 0.000000 | | |

Source: Researcher's Computations using E-Views 8.0 Statistical   Software, 2015

Appendix 68:Regression Analysis:  Model ……………………………………(5)
Dependent Variable: GR
Method: Least Squares
Date: 04/30/15   Time: 18:59
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 11.92112 | 1.412124 | 8.441979 | 0.0000 |
| SCE | -13.68118 | 4.869639 | -2.809485 | 0.0065 |
| CEE | -0.255683 | 1.543032 | -0.165701 | 0.8689 |
| C | -12.32426 | 3.584494 | -3.438213 | 0.0010 |

| | | | |
|---|---|---|---|
| R-squared | 0.584407 | Mean dependent var | 18.47181 |
| Adjusted R-squared | 0.565517 | S.D. dependent var | 20.24338 |
| S.E. of regression | 13.34349 | Akaike info criterion | 8.075380 |
| Sum squared resid | 11751.22 | Schwarz criterion | 8.203865 |
| Log likelihood | -278.6383 | Hannan-Quinn criter. | 8.126416 |
| F-statistic | 30.93645 | Durbin-Watson stat | 0.713070 |
| Prob(F-statistic) | 0.000000 | | |

Source: Researcher's Computations using E-Views 8.0 Statistical   Software, 2015

Appendix 69: Regression Analysis Using Model ……………………………………………(6)
Dependent Variable: SP
Method: Least Squares
Date: 04/30/15   Time: 19:01
Sample: 0001 0070
Included observations: 70

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|------------|-------------|-------|
| HCE | 37.68974 | 4.513579 | 8.350299 | 0.0000 |
| SCE | -43.47451 | 15.56485 | -2.793121 | 0.0068 |
| CEE | -0.878971 | 4.932001 | -0.178218 | 0.8591 |
| C | -56.50422 | 11.45714 | -4.931793 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.578394 | Mean dependent var | 40.69671 |
| Adjusted R-squared | 0.559230 | S.D. dependent var | 64.24089 |
| S.E. of regression | 42.64987 | Akaike info criterion | 10.39937 |
| Sum squared resid | 120054.7 | Schwarz criterion | 10.52786 |
| Log likelihood | -359.9780 | Hannan-Quinn criter. | 10.45041 |
| F-statistic | 30.18139 | Durbin-Watson stat | 0.669936 |
| Prob(F-statistic) | 0.000000 | | |

Appendix 70  Correlation Results of the  Pooled Data

| | P/E R | M/BV | EPS | NAPS | GRPS | SP |
|-----|-------|------|-----|------|------|-----|
| HCE | 0.18828 | 0.119618 | 0.794929 | 0.742299 | 0.729141 | 0.724823 |
| SCE | 0.244592 | 0.016550 | 0.516433 | 0.458136 | 0.362069 | 0.358621 |
| CEE | 0.247821 | 0.07413 | 0.336920 | 0.247670 | 0.191930 | 0.338115 |

**Source: Researcher's Computations using E-Views 8.0 Statistical   Software, 2015**
Where P/ER= Price-Earnings Ratio; MBV= Market to Book Value Ratio; EPS= Earnings per Share; NAPS= Net Asset Value per Share; GRPS: Gross Revenue per Share, SP= Share Price. HCE: Human Capital Efficiency; SCE: Structural Capital Efficiency and CEE: Capital Employed Efficiency.

**Appendix 71: Listed of Companies Quoted in the Nigerian Stock Exchange**

| Company | Symbol | ISIN | Sector |
|---|---|---|---|
| 7-Up Bottling Company Plc | 7UP | NG7UP0000004 | Consumer Goods |
| Abbey Mortgage Bank Plc | ABBEYBDS | NGABBEY00001 | Financial Services |
| Associated Bus Company Plc | ABCTRANS | NGABCTRANS01 | Services |
| Academy Press Plc | ACADEMY | NGACADEMY008 | Services |
| Access Bank Plc | ACCESS | NGACCESS0005 | Financial Services |
| Adswitch Plc | ADSWITCH | NGADSWITCH02 | Industrial Goods |
| Afrik Pharmaceuticals Plc | AFRIK | NGAFRIK00008 | Healthcare |
| African Alliance Insurance Company Plc | AFRINSURE | NGAFRINSURE4 | Financial Services |
| Africa Prudential Registrars Plc | AFRIPRUD | NGAFRIPRUD04 | Financial Services |
| Afromedia Plc | AFROMEDIA | NGAFROMEDIA7 | Services |
| African Paints (Nigeria) Plc | AFRPAINTS | NGAFRPAINTS8 | Industrial Goods |
| A.G. Leventis Nigeria Plc | AGLEVENT | NGAGLEVENT01 | Conglomerates |
| Aiico Insurance Plc | AIICO | NGAIICO00006 | Financial Services |
| Airline Services And Logistics Plc | AIRSERVICE | NGAIRSERVIC9 | Services |
| Aluminium Extrusion Industries Plc | ALEX | NGALEX000003 | Natural Resources |
| Aluminium Manufacturing Company Plc | ALUMACO | NGALUMACO008 | Natural Resources |
| Anino International Plc | ANINO | NGANINO00003 | Oil And Gas |
| Arbico Plc | ARBICO | NGARBICO0007 | Construction/Real Estate |
| Ashaka Cement Plc | ASHAKACEM | NGASHAKACEM8 | Industrial Goods |
| Aso Savings And Loans Plc | ASOSAVINGS | NGASOSAVING3 | Financial Services |
| Austin Laz & Company Plc | AUSTINLAZ | NGAUSTINLAZ9 | Industrial Goods |
| Avon Crowncaps & Containers | AVONCROWN | NGAVONCROWN7 | Industrial Goods |
| Beco Petroleum Product Plc | BECOPETRO | NGBECOPETRO1 | Oil And Gas |
| Berger Paints Plc | BERGER | NGBERGER0000 | Industrial Goods |
| Beta Glass Co Plc | BETAGLAS | NGBETAGLAS04 | Industrial Goods |
| B.O.C. Gases Plc | BOCGAS | NGBOCGAS0008 | Natural Resources |
| Cadbury Nigeria Plc | CADBURY | NGCADBURY001 | Consumer Goods |
| Cap Plc | CAP | NGCAP0000009 | Industrial Goods |
| Capital Hotel Plc | CAPHOTEL | NGCAPHOTEL09 | Services |
| Capital Oil Plc | CAPOIL | NGCAPOIL0007 | Oil And Gas |
| Caverton Offshore Supports Group Plc | CAVERTON | NGCAVERTON07 | Services |
| Cement Company Of Northern Nigeria Plc | CCNN | NGCCNN000003 | Industrial Goods |
| Champion Brew. Plc | CHAMPION | NGCHAMPION00 | Consumer Goods |
| Chams Plc | CHAMS | NGCHAMS00001 | ICT |
| Chellarams Plc | CHELLARAM | NGCHELLARAM5 | Conglomerates |
| C & I Leasing Plc | CILEASING | NGCILEASING2 | Services |
| Conoil Plc | CONOIL | NGCONOIL0003 | Oil And Gas |
| Continental Reinsurance Plc | CONTINSURE | NGCONTINSUR9 | Financial Services |
| Cornerstone Insurance Company Plc | CORNERST | NGCORNERST03 | Financial Services |
| Costain (W A) Plc | COSTAIN | NGCOSTAIN006 | Construction/Real Estate |
| Courteville Business Solutions Plc | COURTVILLE | NGCOURTVILE6 | ICT |
| Custodian And Allied Plc | CUSTODYINS | NGCUSTODYIN6 | Financial Services |
| Cutix Plc | CUTIX | NGCUTIX00002 | Industrial Goods |
| Computer Warehouse Group Plc | CWG | NGCWG0000002 | ICT |
| Daar Communications Plc | DAARCOMM | NGDAARCOMM01 | Services |
| Dangote Cement Plc | DANGCEM | NGDANGCEM008 | Industrial Goods |
| Dangote Flour Mills Plc | DANGFLOUR | NGDANGFLOUR2 | Consumer Goods |
| Dangote Sugar Refinery Plc | DANGSUGAR | NGDANSUGAR02 | Consumer Goods |
| Deap Capital Management & Trust Plc | DEAPCAP | NGDEAPCAP009 | Financial Services |
| Diamond Bank Plc | DIAMONDBNK | NGDIAMONDBK6 | Financial Services |

**Source: African Market**
http://www.african-markets.com/en/stock-markets/ngse/listed-companies

**Appendix 71 Contd'**

| | | | |
|---|---|---|---|
| DN Meyer Plc | DNMEYER | NGDNMEYER001 | Industrial Goods |
| DN Tyre & Rubber Plc | DUNLOP | NGDUNLOP0005 | Consumer Goods |
| Ekocorp Plc | EKOCORP | NGECOCORP009 | Healthcare |
| Ellah Lakes Plc | ELLAHLAKES | NGELLAHLAKE8 | Agriculture |
| Nigerian Enamelware Plc | ENAMELWA | NGENAMELWA03 | Consumer Goods |
| Equity Assurance Plc | EQUITYASUR | NGEQUITYASS2 | Financial Services |
| Eterna Plc | ETERNA | NGETERNAOIL1 | Oil And Gas |
| Ecobank Transnational Incorporated | ETI | TG0000000132 | Financial Services |
| E-Tranzact International Plc | ETRANZACT | NGETRANZ0005 | ICT |
| Evans Medical Plc | EVANSMED | NGEVANSMED04 | Healthcare |
| FBN Holdings Plc | FBNH | NGFBNH000009 | Financial Services |
| FCMB Group Plc | FCMB | NGFCMB000005 | Financial Services |
| Fidelity Bank Plc | FIDELITYBK | NGFIDELITYB5 | Financial Services |
| Fidson Healthcare Plc | FIDSON | NGFIDSON0006 | Healthcare |
| First Aluminium Nigeria Plc | FIRSTALUM | NGFIRSTALUM7 | Industrial Goods |
| Flour Mills Nigeria Plc | FLOURMILL | NGFLOURMILL0 | Consumer Goods |
| Forte Oil Plc | FO | NGAP00000004 | Oil And Gas |
| Fortis Microfinance Bank Plc | FORTISMFB | NGFORTISMFB0 | Financial Services |
| FTN Cocoa Processors Plc | FTNCOCOA | NGFTNCOCOA02 | Agriculture |
| G Cappa Plc | GCAPPA | NGGCAPPA0001 | Construction/Real Estate |
| Glaxo Smithkline Consumer Nigeria Plc | GLAXOSMITH | NGGLAXOSMTH8 | Healthcare |
| Great Nigerian Insurance Plc | GNI | NGGNIPLC0002 | Financial Services |
| Golden Guinea Breweries Plc | GOLDBREW | NGGOLDBREW01 | Consumer Goods |
| Goldlink Insurance Plc | GOLDINSURE | NGGOLDINSUR8 | Financial Services |
| Guaranty Trust Bank Plc | GUARANTY | NGGUARANTY06 | Financial Services |
| Guinea Insurance Plc | GUINEAINS | NGGUINEAINS0 | Financial Services |
| Guinness Nigeria Plc | GUINNESS | NGGUINNESS07 | Consumer Goods |
| Consolidated Hallmark Insurance Plc | HMARKINS | NGHMARKINS04 | Financial Services |
| Honeywell Flour Mill Plc | HONYFLOUR | NGHONYFLOUR7 | Consumer Goods |
| Investment And Allied Assurance Plc | IAINSURE | NGIAINSURE01 | Financial Services |
| IHS Plc | HIS | NGIHS0000005 | ICT |
| Ikeja Hotel Plc | IKEJAHOTEL | NGIKEJAHOTL7 | Services |
| Infinity Trust Mortgage Bank Plc | INFINITY | NGINFINITY01 | Financial Services |
| International Breweries Plc | INTBREW | NGINTBREW005 | Consumer Goods |
| International Energy Insurance Company Plc | INTENEGINS | NGINTENEGIN5 | Financial Services |
| Interlinked Technologies Plc | INTERLINK | NGINTERLINK3 | Services |
| IPWA Plc | IPWA | NGIPWA000006 | Industrial Goods |
| Japaul Oil & Maritime Services Plc | JAPAULOIL | NGJAPAULOIL4 | Oil And Gas |
| Julius Berger Nig. Plc | JBERGER | NGJBERGER009 | Construction/Real Estate |
| John Holt Plc | JOHNHOLT | NGJOHNHOLT05 | Conglomerates |
| Jos International Breweries Plc | JOSBREW | NGJOSBREW003 | Consumer Goods |
| Juli Plc | JULI | NGJULI000003 | Services |
| Lasaco Assurance Plc | LASACO | NGLASACO0002 | Financial Services |
| Law Union And Rock Insurance Plc | LAWUNION | NGLAWUNION02 | Financial Services |
| Learn Africa Plc | LEARNAFRCAN | GLONGMAN007 | Services |
| Lennards (Nigeria) Plc | LENNARDS | NGLENNARDS00 | Services |
| Linkage Assurance Plc | LINKASSURE | NGLINKASSUR7 | Financial Services |
| Livestock Feeds Plc | LIVESTOCK | NGLIVESTOCK5 | Agriculture |
| P S Mandrides & Co Plc | MANDRID | NGPSMANDRIP6 | Consumer Goods |
| Mansard Insurance Plc | MANSARD | NGGTASSURE05 | Financial Services |
| May & Baker Nigeria Plc | MAYBAKER | NGMAYBAKER01 | Healthcare |
| Mutual Benefits Assurance Plc | MBENEFIT | NGMBENEFT000 | Financial Services |
| McNichols Plc | MCNICHOLS | NGMCNICHOLS7 | Consumer Goods |
| Mobil Oil Nigeria Plc | MOBIL | NGMOBIL00007 | Oil And Gas |
| Morison Industries Plc | MORISON | NGMORISON000 | Healthcare |

**Source: African Market, http://www.african-markets.com/en/stock-markets/ngse/listed-companies**

**Appendix 71 Contd'**

| | | | |
|---|---|---|---|
| MRS Oil Nigeria Plc | MRS | NGCHEVRON008 | Oil And Gas |
| MTech Communications Plc | MTECH | NGMTECH00001 | ICT |
| Mass Telecommunication Innovations Nigeria Plc | MTI | NGMTI0000003 | ICT |
| Multi-Trex Integrated Foods Plc | MULTITREX | NGMULTITREX0 | Consumer Goods |
| Multiverse Plc | MULTIVERSE | NGMULTIVERS6 | Natural Resources |
| Nigerian Aviation Handling Company Plc | NAHCO | NGNAHCO00008 | Services |
| National Salt Company Nigeria Plc | NASCON | NGNASCON0005 | Consumer Goods |
| Nigerian Breweries Plc | NB | NGNB00000005 | Consumer Goods |
| NCR Nigeria Plc | NCR | NGNCR0000008 | ICT |
| Neimeth International Pharmaceuticals Plc | NEIMETH | NGNEIMETH001 | Healthcare |
| NEM Insurance Company Nigeria Plc | NEM | NGNEM0000005 | Financial Services |
| Nigeria Energy Sector Fund | NESF | NGNESF000003 | Financial Services |
| Nestle Nigeria Plc | NESTLE | NGNESTLE0006 | Consumer Goods |
| Nigeria-German Chemicals Plc | NIG-GERMAN | NGNIGGERMAN3 | Healthcare |
| Niger Insurance Plc | NIGERINS | NGNIGERINS04 | Financial Services |
| Nigerian Ropes Plc | NIGROPES | NGNIGROPES04 | Industrial Goods |
| Nigerian Sewing Machine Manufacturing Plc | NIGSEWING | NGNIGSEWING3 | Industrial Goods |
| Nigerian Wire And Cable Plc | NIWICABLE | NGNIGWIRE007 | Industrial Goods |
| Northern Nigeria Flour Mills Plc | NNFM | NGNNFM000008 | Consumer Goods |
| NPF Microfinance Bank Plc | NPFMCRFBK | NGNPFMCRFBK0 | Financial Services |
| Secure Electronic Technology Plc | NSLTECH | NGNSLTECH006 | Services |
| Oando Plc | OANDO | NGOANDO00002 | Oil And Gas |
| Okomu Oil Palm Plc | OKOMUOIL | NGOKOMUOIL00 | Agriculture |
| Omatek Ventures Plc | OMATEK | NGOMATEX0001 | ICT |
| Omoluabi Savings And Loans Plc | OMOSAVBNK | NGOMOSAVBNK4 | Financial Services |
| Paints And Coatings Manufactures Plc | PAINTCOM | NG%20PAINTCOM0 | Industrial Goods |
| Pharma-Deko Plc | PHARMDEKO | NGPHARMDEKO7 | Healthcare |
| Portland Paints & Products Nigeria Plc | PORTPAINT | NGPORTPAINT6 | Industrial Goods |
| Premier Breweries Plc | PREMBREW | NGPREMBREW05 | Consumer Goods |
| Premier Paints Plc | PREMPAINTS | NGPREMPAINT2 | Industrial Goods |
| Presco Plc | PRESCO | NGPRESCO0005 | Agriculture |
| Prestige Assurance Co. Plc | PRESTIGE | NGPRESTIGE00 | Financial Services |
| PZ Cussons Nigeria Plc | PZ | NGPZ00000005 | Consumer Goods |
| Rak Unity Petroleum Company Plc | RAKUNITY | NGRAKUNITY02 | Oil And Gas |
| Red Star Express Plc | REDSTAREX | NGREDSTAREX9 | Services |
| Regency Alliance Insurance Company Plc | REGALINS | NGREGALINS04 | Financial Services |
| Resort Savings & Loans Plc | RESORTSAL | NGRESORTSAL1 | Financial Services |
| Roads Nigeria Plc | ROADS | NGROADS00004 | Construction/Real Estate |
| Rokana Industries Plc | ROKANA | NGROKANA0001 | Consumer Goods |
| Royal Exchange Plc | ROYALEX | NGROYALEX007 | Financial Services |
| R T Briscoe Plc | RTBRISCOE | NGRTBRISCOE9 | Services |
| S C O A Nigeria Plc | SCOA | NGSCOA000009 | Conglomerates |
| Seplat Petroleum Development Company Ltd | SEPLAT | NGSEPLAT0008 | Oil And Gas |
| Sim Capital Alliance Value Fund | SIMCAPVAL | NGSIMCAPVAL6 | Financial Services |
| Skye Bank Plc | SKYEBANK | NGSKYEBANK07 | Financial Services |
| Skye Shelter Fund Plc | SKYESHELT | NGSKYESHELT8 | Construction/Real Estate |
| Smart Products Nigeria Plc | SMURFIT | NGSMURFIT002 | Construction/Real Estate |
| Sovereign Trust Insurance Plc | SOVRENINS | NGSOVRENINS5 | Financial Services |
| Standard Trust Assurance Plc | STACO | NGSTACO00002 | Financial Services |
| Stanbic IBTC Holdings Plc | STANBIC | NGSTANBIC003 | Financial Services |
| Standard Alliance Insurance Plc | STDINSURE | NGSTDINSURE7 | Financial Services |
| Sterling Bank Plc | STERLNBANK | NGSTERLNBNK7 | Financial Services |
| Stokvis Nigeria Plc | STOKVIS | NGSTOKVIS004 | Industrial Goods |
| Studio Press (Nig) Plc | STUDPRESS | NGSTUDPRESS1 | Services |
| Tantalizers Plc | TANTALIZER | NGTANTALIZE1 | Services |

**Source: African Market**
**http://www.african-markets.com/en/stock-markets/ngse/listed-companies**

**Appendix 71 Contd'**

| | | | |
|---|---|---|---|
| Thomas Wyatt Nigeria Plc | THOMASWY | NGTHOMASWY07 | Natural Resources |
| Total Nigeria Plc | TOTAL | NGTOTAL00001 | Oil And Gas |
| Tourist Company Of Nigeria Plc | TOURIST | NGTOURIST009 | Services |
| Transcorp Hotels Plc | TRANSCOHOT | NGTRANSHOTL1 | Services |
| Transnational Corporation Of Nigeria Plc | TRANSCORP | NGTRANSCORP7 | Conglomerates |
| Trans-Nationwide Express Plc | TRANSEXPR | NGTRANSEXPR4 | Services |
| Tripple Gee And Company Plc | TRIPPLEG | NGTRIPPLEG04 | ICT |
| UACN Property Development Co. Limited | UAC-PROP | NGUACPROP006 | Construction/Real Estate |
| UAC of Nigeria Plc | UACN | NGUACN000006 | Conglomerates |
| United Bank For Africa Plc | UBA | NGUBA0000001 | Financial Services |
| UBA Capital Plc | UBCAP | NGUBCAP00003 | Financial Services |
| Union Bank of Nigeria Plc | UBN | NGUBN0000004 | Financial Services |
| Union Homes Real Estate Investment Trust (REIT) | UHOMREIT | NGUHOMREIT06 | Construction/Real Estate |
| Union Homes Savings And Loans Plc | UNHOMES | NGUNHOMES007 | Financial Services |
| UNIC Insurance Plc | UNIC | NGUNIC000008 | Financial Services |
| Unilever Nigeria Plc | UNILEVER | NGUNILEVER07 | Consumer Goods |
| Union Diagnostic & Clinical Services Plc | UNIONDAC | NGUNIONDAC06 | Healthcare |
| Union Dicon Salt Plc | UNIONDICON | NGUNIONDICO1 | Consumer Goods |
| Navitus Energy Plc | UNIONVENT | NGUNIONVENT8 | Oil And Gas |
| Unity Bank Plc | UNITYBNK | NGUNITYBANK3 | Financial Services |
| Unity Kapital Assurance Plc | UNITYKAP | NGUNITYKAP04 | Financial Services |
| Universal Insurance Company Plc | UNIVINSURE | NGUNIVINSUR9 | Financial Services |
| University Press Plc | UPL | NGUPL0000008 | Services |
| UTC Nigeria Plc | UTC | NGUTC0000009 | Consumer Goods |
| Greif Nigeria Plc | VANLEER | NGVANLEER005 | Industrial Goods |
| Vitafoam Nigeria Plc | VITAFOAM | NGVITAFOAM00 | Consumer Goods |
| Vono Products Plc | VONO | NGVONO000005 | Consumer Goods |
| West African Glass Industry Plc | WAGLASS | NGWAGLASS003 | Industrial Goods |
| Lafarge Africa Plc | WAPCO | NGWAPCO00002 | Industrial Goods |
| WAPIC Insurance Plc | WAPIC | NGWAPIC00004 | Financial Services |
| Wema Bank Plc | WEMABANK | NGWEMABANK07 | Financial Services |
| Zenith International Bank Plc | ZENITHBANK | NGZENITHBNK9 | Financial Services |

**Source: African Market**
**http://www.african-markets.com/en/stock-markets/ngse/listed-companies**

**Appendix 72: Sectoral Capitalization of Quoted Firms in Nigeria**

| By Industry Sector | Q4 2013 | 52 Week Change |
|---|---|---|
| **Agriculture** | N90.68 bn | |
| | $567.51mn | 123.30 |
| **Conglomerates** | N308.53bn | |
| | $1.93bn | 188.66 |
| **Construction/Real Estate** | N210.33bn | 61.25 |
| | $1.32bn | |
| **Consumer Goods** | 3.76tn | |
| | $23.53bn | 31.54 |
| **Financial Services** | 3.99tn | |
| | $24.99bn | 30.95 |
| **Healthcare** | 80.51bn | |
| | $503.83 | 48.23 |
| **ICT** | 77.25bn | |
| | $483.45 | 19.93 |
| **Industrial Goods** | N4.20tn | |
| | $26.28bn | 70.72% |
| **Natural Resources** | 7.99bn | |
| | $50.00 | 2.59% |
| **Oil & Gas** | N449.23bn | |
| | $2.81bn | 198.44% |
| **Services** | N55.19bn | |
| | $345.39mn | -3.89% |

**Source: NSE Q4 2013 Fact Sheet**

Total Capitalization of all industrial Sectors = 9,033.91

Total Capitalization of sectors studied     =     4,675.52

Percentage of market capitalization of Sectors Studied     =     51.76%

**Appendix 73: Data on Firms' Value Added and Other Financial Information**
A. HealthCare Sector: Glaxo Smithkline Plc.

| Yr/ Variable | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | |
| Gross Revenue | 29,183,675 | 25,308,159 | 21,525,803 | 16,863,533 | 14,952,445 | 12,545,129 | 9,915,400 | 10,389,553 | 8,589,814 | 7,149,033 | |
| Capital Employed | 26,213,663 | 21,792.721 | 17,940,156 | 14,737,912 | 12,078,362 | 9,611,281 | 8,719,161 | 8,869,207 | 8,296,389 | 6,021,983 | |
| **Value Added** | 7,532,517 | 7,057,287 | 5,809,318 | 5,324,011 | 4,205,036 | 3,307,983 | 2,410,929 | 2,817,057 | 2,324,219 | 2,097,534 | |
| Salaries/ Wages | 2,283,945 | 2,069,771 | 1,556,216 | 1,433,423 | 1,220,289 | 1,057,463 | 894,636 | 926,409 | 681,405 | 604,497 | |
| Taxation | 1,395,659 | 1,348,139 | 1,197,632 | 909,491 | 767,767 | 548,670 | 329,572 | 440,144 | 433,422 | 369,998 | |
| Interest paid | 514 | 151 | 1,787 | 696 | 1,500 | 4,671 | 7,841 | 42,568 | 32,701 | 17,350 | |
| Depreciation | 926,036 | 810,553 | 734,861 | 537,008 | 513,651 | 427,827 | 342,002 | 325,643 | 200,950 | 150,428 | |
| Dividend | - | - | - | - | - | 430,516 | 430,516 | 430,516 | - | 279,038 | |
| Reserves | 2,926,366 | 2,828,673 | 2,314,822 | 1,313,353 | 984,303 | 695,467 | 406,361 | 651,777 | 593,061 | 676,223 | |

**Source:** Firm's Annual Reports & Accounts

**2. May & Baker Nig. Plc**

| Year/ Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 6,367,605 | 5,668,449 | 4,749,617 | 4,639,202 | 4,604,458 | 5,439,910 | 3,859,749 | 2,253,389 | 1,996,974 | 1,900,685 |
| Capital Employed | 3,029,207 | 3,132,296 | 3,152,220 | 2,883,384 | 2,705,707 | 2,753,626 | 2,615,664 | 2,617,346 | 816,905 | 731,562 |
| | **2013** | **2012** | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** |
| **Value Added** | 1,685,519 | 1,497,052 | 1,222,153 | 1,125,572 | 1,065,579 | 1,394,932 | 946,668 | 632,605 | 472,128 | 425,535 |
| Sal/Wages | 556,412 | 561,417 | 446,332 | 424,253 | 376,237 | 374,361 | 286,252 | 185,318 | 167,006 | 161,183 |
| Taxation | 91,719 | 35,365 | 156,652 | 104,895 | 92,476 | 172,190 | 97,708 | 70,036 | 46,007 | 26,055 |
| Interest paid | 630,000 | 469,630 | 242,533 | 183,685 | 149,873 | 127,124 | 103,889 | 104,143 | 94,987 | 86,301 |
| Depreciation | 711,000 | 421,483 | 206,069 | 209,844 | 195,307 | 185,135 | 158,449 | 76,953 | 55,514 | 51,893 |
| Deferred taxation | 54,647 | 66,786 | 51,605 | 9,918 | 19,605 | 118,160 | 92,052 | (15,315) | 6,855 | 8,964 |
| Reserves | (103,089) | 75,943 | 222,172 | 192,977 | 232,081 | 417,962 | 208,318 | 211,470 | 25,749 | 73,041 |
| Dividends | - | - | - | - | - | - | - | - | 76,013 | 18,098 |

**Source:** Firms Annual Reports & Accounts

**Appendix 73   Contd'**
**3. Evans Nig. Plc**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 4,928,349 | 4,864,487 | 4,572,073 | 3,942,683 | 3,523,703 | 4,465,237 | 3,151,753 | 2,908,469 | 2,529,500 | 2,368,375 |
| Capital Employed | 7,425,680 | 7,304,591 | 4,289,560 | 4,016,269 | 3,967,046 | 4,697,203 | 4,347,755 | 3,819,377 | 3,335,940 | 3,368,927 |
| Net Asset/Share | 562k | 550k | 475k | (13k) | (15k) | 186k | 299k | 371k | 403k | 444k |
| **Value Added** | 1,834,605 | 1,556,674 | 1,394,234 | 1,097,577 | 434,881 | 798,838 | 611,840 | 949,071 | 636,394 | 446,727 |
| Salaries/Wages | 664,105 | 651,083 | 782,989 | 586,194 | 170,339 | 574,020 | 454,233 | 387,230 | 331,135 | 278,129 |
| Taxation | 42,820 | (86,663) | 35,639 | (63,142) | (69,392) | 122,274 | (56,417) | 54,409 | 15,547 | 45,589 |
| Interest Paid | 563,784 | 503,378 | 316,729 | 409,307 | 565,498 | 434,060 | (357,756) | 217,395 | 181,699 | 145,548 |
| Depreciation | 245,252 | 204,377 | 164,362 | 156,455 | 170,339 | 178,582 | 173,287 | 157,833 | 127,447 | 59,997 |
| Deferred taxation | - | - | - | - | - | - | - | - | - | - |
| Reserves | 318,644 | 284,504 | 94,515 | 8,763 | (889,591) | (510,098) | (317,019) | 132,204 | (74,715) | (103,853) |
| Dividends | - | - | - | - | - | - | - | - | 55,281 | - |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73          Contd'**

**B. ICT**
**Interlinked  Technologies**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦ '000 | ₦ '000 | ₦'000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 |
| Gross Revenue | 203,749,000 | 192,503,403 | 285,169,613 | 174,316,000 | 292,133,000 | 285,635,000 | 77,087,000 | 128,410,000 | 44,503,000 | 17,458,000 |
| Capital Employed | 267,485,000 | 433,753,874 | 448,775,665 | 446,450,000 | (25,680) | 2,742 | 942 | 2,930 | (5,162) | (7,236) |
| **Total Value Added** | 34,246,000 | 12,078,871 | 27,244,065 | (710,973) | 59,903,071 | 20,042,247 | 21,756,491 | 23,470,735 | 18,230,875 | 15,496,244 |
| Salaries/Wages | 20,358,000 | 18,495,586 | 19,965,898 | 8,695,179 | 12,232,328 | 17,622,964 | 10,697,791 | 3,772,617 | 5,675,385 | 4,824,077 |
| Interest paid | 4,424,000 | 2,177,379 | 916,619 | 338,082 | 29,526,831 | 21,773,781 | 15,201,051 | 8,628,820 | 6,734,045 | 6,723,938 |
| Taxation | 2,451,000 | 2,396,474 | 2,593,202 | 2,449,889 | 992,183 | 596,085 | 825,198 | 1,054,310 | 1,964,093 | 1,669,480 |
| Depreciation | 2,510,000 | 3,246,867 | 3,828,021 | 3,574,514 | 2,545,983 | 2,345,681 | 2,134,520 | 1,923,358 | 1,783,358 | 1,515,854 |
| Reserves | 3,696 | (15,021,792) | 3,199,489 | (18,833,096) | 1,124,539 | (13,116,702) | 10,604,162 | 8,091,621 | 2,073,994 | 1,762,804 |
| Deferred Charges | 808,000 | 784,353 | (3,259,164) | 3,064,459 | 13,481,207 | (9.179,562) | - | - | - | - |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73  Contd'**

**2.  Chams Nig. Plc**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 |
|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 3,439,197 | 2,835,705 | 1,777,737 | 1,484,915 | 988,615 | 2,400,342 | 2,269,191 | 2,011,843 | 1,994,726 |
| E/(Loss) PS(k) | 42 | 3 | (26) | (34) | (61) | 4 | 3.8 | 3.2 | 3 |
| Capital Employed | 4,677,747 | 4,489,583 | 4,011,215 | 5,151,734 | 7,192,543 | 9,107,316 | 7,7,21941 | 7,586,394 | 6,979,482 |
| | | | | | | | | | |
| **Total Value Added** | 1,083,520 | 1,391,915 | 28,034 | 26,592 | 1,231,423 | 1,049,259 | 996,797 | 856,277 | 685,022 |
| Salaries & Wages | 437,657 | 373,087 | 513,190 | 436,212 | 370,780 | 315,164 | 252,131 | 226,916 | 170,187 |
| Taxation | (81,541) | 81,903 | 38,582 | 32,795 | 28,204 | 25,101 | 21,337 | 20,484 | 19,459 |
| Interest paid | 216,472 | 230,133 | 226,240 | 192,304 | 182,689 | 158,018 | 146,980 | 142650 | 138,900 |
| Depreciation | 322,468 | 619,068 | 487,004 | 418,823 | 368,564 | 350,136 | 304,618 | 292,433 | 248,568 |
| Deferred Tax | - | 185 | - | - | - | - | - | - | - |
| Reserve | 188,464 | 87,539 | 1,236,982 | 1,033,450 | 1,006,400 | 980,055 | 650,560 | 566,444 | 408,920 |

**Source:** Firms Annual Reports & Accounts

**Appendix 73 Contd'**
**3. NCR Nigeria Plc.**

| Year/ Varianles | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 |
|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 8,756,678 | 6,463,898 | 2,855,485 | 2,403,336 | 2,204,471 | 1,901,213 | 1,635,582 | 1,514,796 | 1,344,212 |
| **T. Value Added** | 3,164,837 | 3,262,364 | 1,450,720 | 841,168 | 705,430 | 570,364 | 686,534 | 530,179 | 416,706 |
| Salaries/ Wages | 1,019,451 | 903,789 | 464,230 | 336,461 | 325,738 | 276,813 | 305,960 | 259,054 | 225,012 |
| Interest Paid | 72,003 | - | 4,012 | 5,904 | 8,099 | 14,899 | 45,100 | 34,500 | 32,089 |
| Taxation | 643,616 | 10,063 | 22,258 | 32,560 | 84,651 | 92,546 | 78,908 | 11,405 | 22,844 |
| Depreciation | 56,445 | 49,554 | 47,870 | 45,896 | 43,563 | 40,784 | 38,955 | 35,722 | 32,099 |
| Dividends | 324,000 | 324,000 | 324,000 | 324,000 | - | - | - | - | - |
| Reserve | 1,105,767 | 1,974,958 | 588,377 | 96,345 | 343,379 | 145,322 | 217,611 | 189,498 | 104,662 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73:   Contd'**

**C. Oil and Gas Sector**

**1.  Oando Nig. Plc**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | N'000 | N'000 | N'000 | N'000 | N'000 | N'000 | N'000 | N'000 | N'000 | N'000 |
| Gross Revenue | 449,873,466 | 650,565,603 | 571,305,637 | 378,925,430 | 336,859,678 | 339,420,435 | 185,892,083 | 209,078,938 | 121,591,653 | 85,852,713 |
| Net Assets/Share(k) | 2,608 | 4,633 | 4,064 | 5,140 | 5,836 | 4,960 | 7,492 | 3,864 | 3,703 | 5,399 |
| EPS(k) | 23 | 4584 | 162 | 829 | 1132 | 922 | 751 | 411 | 202 | 148 |
| Capital Employed | 162,368,077 | 102,212,589 | 91,693,885 | 94,089,750 | 52,311,541 | 44,727,696 | 47,228,852 | 22,113,920 | 21,190,995 | 19,823,858 |
| **T.Value Added** | 51,279,547 | 55,976,732 | 41,375,094 | 45,957,026 | 44,067,696 | 30,295,484 | 11,318,886 | 8,519,088 | 7,188,440 | 7,899,401 |
| Salaries and Wages | 9,499,057 | 8,621,891 | 9,384,180 | 6,485,461 | 4,128,434 | 3,092,217 | 2,451,957 | 2,133,775 | 2,183,272 | 2,085,157 |
| Taxation | 4,840,505 | 9,913,242 | 14,249,128 | 10,013,889 | 9,943,879 | 4,108,357 | 1,138,919 | 858,626 | 678,343 | 117,910 |
| Dividends | - | - | - | 2,715,253 | 2,713,139 | 2,715,102 | - | - | - | 1,144,602 |
| Interests | 21,637,777 | 20,093,243 | 8,825,689 | 5,747,458 | 11,825,980 | 10,667,689 | 1,273,646 | 3,269,136 | 1,268,383 | 3,009,402 |
| Deferred Taxation | 907,790 | 3,145,492 | (2,767,374) | (70,010) | 3,945,702 | (1,709,071) | 194,394 | 52,582 | 169,153 | 20,796 |
| Depreciation | 12,960 | 8,605,705 | 8,456,915 | 6,690,009 | 5,770,462 | 5,792,966 | 1,480,925 | 1,286,033 | 1,115,696 | 940,568 |
| Reserves | 1,439,379 | 11,523,371 | 3,446,643 | 14,379,066 | 10,243,168 | 5,624,172 | 4,755,009 | 2,725,481 | 266,297 | 266,297 |
| Minority Interest | (5,014) | | (220,087) | (4,100) | 146,189 | 4,052 | 24,036 | 349,597 | 258,299 | 314,669 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73 Contd'**

**2. Total Nigeria Plc**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 |
| Gross Revenue | 238,163,160 | 217,843,731 | 173,948,954 | 160,604,104 | 178,570,273 | 177,411,946 | 137,339,503 | 126,573,956 | 126,722,103 | 95,011,773 |
| Net Assets/Share(₦) | 39.00 | 33.29 | 29.53 | 26.30 | 20.57 | 21.41 | 18.67 | 16.98 | 18.17 | 11.02 |
| Capital Employed | 79,403,587 | 76,067,065 | 58,719,810 | 54,601,360 | 53,700,803 | 41,770,668 | 6,338,944 | 5,388,102 | 4,579,887 | 3,892,904 |
| EPS(₦) | 15.71 | 13.76 | 11.23 | 16.01 | 11.69 | 12.94 | 9.59 | 7.41 | 10.65 | 8.18 |
| Share Price (₦) | 170 | 120.57 | | 234.00 | 149.00 | 203.69 | 180 | 185.02 | 183.01 | 182.49 |
| **T.Value Added** | 18,898,146 | 16,252,184 | 13,329,114 | 13,201,142 | 11,982,464 | 10,821,247 | 9,303,765 | 6,714,403 | 8,402,959 | 7,282,123 |
| Sal / Wages and other benefits | 5,698,161 | 5,228,969 | 4,717,976 | 3,929,869 | 4,022,766 | 2,948,922 | 3,368,589 | 2,466,966 | 2,293,186 | 2,229,902 |
| Taxation | 2,862,878 | 2,274,157 | 1,801,031 | 1,601,908 | 1,972,275 | 1,933,582 | 1,284,666 | 902,395 | 1,338,354 | 1,492,848 |
| Dividends | - | - | - | 2,716,175 | 3,965,614 | 4,390,017 | - | 882,757 | 3,225,457 | 3,055,697 |
| Interests | 1,981,385 | 1,572,437 | 874,998 | 464,368 | 516,497 | 269,085 | 76,983 | 164,849 | 69,096 | 15,904 |
| D. Taxation | 400,722 | 153,098 | 244,380 | 209,639 | 223,025 | 181,442 | 288,249 | (170,048) | 281,641 | 233,473 |
| Depreciation | 2,620,909 | 2,352,606 | 1,877,527 | 1,558,720 | 1,279,842 | 1,095,054 | 1,029,398 | 833,548 | 805,642 | 531,092 |
| Reserves | 5,334,091 | 4,670,917 | 3,813,202 | 5,436,638 | 3,968.059 | 4,393,169 | 3,255,410 | 1,633,936 | 389,583 | (276,793) |

**Source:** Firm's Annual Reports & Accounts

**3. Mobil Nigeria Plc**

| Variables/Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 |
| Gross Revenue | 78,744,100 | 80,801,947 | 62,099,515 | 58,343,069 | 62,032,058 | 66,740,879 | 54,541,943 | 50,809,805 | 5,914,923 | 46,546,705 |
| Capital Employed | 9,537,631 | 6,589,968 | 4,497,588 | 3,897,263 | 4,176,545 | 2,837,062 | 2,248,348 | 2,833,678 | 3,305,081 | 882,551 |
| | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
| **T.Value** | 8,732,281 | 7,879,140 | 8,997,425 | 9,082,288 | 7,006,476 | 5,955,505 | 8,841,771 | 5,728,037 | 6,011,372 | 5,710,803 |
| Salaries/ Wages and other benefits | 2,425,629 | 2,853,268 | 2,645,879 | 2,476,305 | 1,778,695 | 1,511,890 | 2,003,343 | 2,494,795 | 1,950,702 | 1,872,672 |
| Taxation | 1,642,217 | 1,198,250 | 1,769,645 | 1,836,118 | 1,224,190 | 1,077,287 | 948,280 | 819,273 | 971,373 | 932,518 |
| Dividend | 1,802,976 | 1,502,480 | 2,884,762 | 2,103,472 | 1,502,480 | 1,277,108 | 1,732,360 | 2,187,611 | - | - |
| Interests | 151,940 | 298,860 | 165,961 | 210,496 | 525,597 | 446,757 | 327,673 | 208,770 | 110,141 | 104,634 |
| Depreciation | 1,031,710 | 650,463 | 661,264 | 673,759 | 636,031 | 540,626 | 514,809 | 488,991 | 556,626 | 473,132 |
| Reserves | 3,480,785 | 2,878,299 | 3,754,676 | 3,885,610 | 2,841,963 | 2,415,669 | 2,065,983 | 1,716,208 | 2,422,530 | 2,302,403 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73 Contd'**
**d. Food & Beverage**
**1. Nestle Nigeria Plc**

| Years/ Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Earnings | 133,084,000 | 116,707,394 | 97,961,260 | 80,108,738 | 68,317,303 | 51,742,302 | 44,027,525 | 38,422,782 | 34,335,891 | 28,461,078 |
| Capital Employed | 108,207,480 | 88,932,218 | 77,728,293 | 60,828,397 | 47,251,802 | 29,159,552 | 21,252,320 | 18,908,215 | 16,875,084 | 13,399,870 |
| **T.Value Added** | 48,449,104 | 43,921,319 | 35,940,933 | 30,567,043 | 24,077,636 | 20,235,841 | 16,308,186 | 14,881,451 | 12,464,581 | 10,346,405 |
| Salaries/ Wages | 15,582,276 | 13,248,045 | 11,304,927 | 9,326,692 | 8,272,085 | 7,041,453 | 6,615,583 | 5,701,312 | 3,924,965 | 3,791,884 |
| Taxation | 3,789,311 | 3,832,968 | 1,702,580 | 5,642,345 | 3,999,666 | 3,530,614 | 3,021,889 | 2,537,568 | 2,604,720 | 2,264,788 |
| Dividend | 20,212,728 | 15,853,125 | 8,758,852 | 8,289,863 | 8,289,863 | 8,289,863 | 5,568,410 | 5,284,375 | 5,284,375 | 3,699,062 |
| Depreciation /Amortization | 4,672,541 | 4,041,061 | 3,098,696 | 2,2425 94 | 1,565,267 | 1,264,737 | 1,228,815 | 982,242 | 631,768 | 454,240 |
| Reserves | 2,045,551 | 5,097,649 | 6,548,112 | 4,312,246 | 1,493,715 | 41,736 | 5,441,899 | 375,954 | 18,753 | 136,431 |
| Interests Paid | 2,146,697 | 1,848,471 | 3,338,782 | 753,303 | 457,040 | 67,438 | - | - | - | - |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73 Contd'**

**1.  7- Up Bottling Company Plc.**

| Year/ Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 64,088,879 | 59,864,385 | 51,098,232 | 41,069,113 | 34,864,287 | 30,572,218 | 27,309,123 | 22,071,731 | 17,346,662 | 14,937,371 |
| Capital Employed | 51,370,170 | 48,485,662 | 40,231,991 | 33,511,741 | 31,879,851 | 23,982,210 | 21,647,367 | 17,099,491 | 13,985,964 | 10,538,176 |
| | **2013** | **2012** | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** |
| **Total Value Added** | 21,292,049 | 16,956,067 | 14,451,885 | 13,653,430 | 11,237,154 | 9,871,071 | 8,571,424 | 7,230,697 | 6,092,320 | 5,422,153 |
| Sal/Wages | 8,387,826 | 7,468,809 | 7,325,812 | 5,847,397 | 5,022,559 | 4,892,842 | 4,510,701 | 3,897,349 | 3,254,283 | 2,568,808 |
| Taxation | 406,215 | 859,978 | 247,538 | 876,706 | 693,762 | 871,888 | 741,309 | 538,779 | 565,230 | 542,566 |
| Dividend | - | - | - | - | 1,529,674 | 1,608,910 | - | 512,472 | 512,472 | 409,978 |
| Depreciation / Amortization | 7,279,349 | 4,258,078 | 2,877,090 | 2,621,450 | 2,076,622 | 1,694,858 | 1,385,605 | 1,254,085 | 998,717 | 817,807 |
| Reserves | 2,928,857 | 2,068,534 | 2,277,544 | 1,758,457 | Nil | Nil | 1,219,402 | 654,741 | 441,824 | 734,016 |
| Interests | 2,289,784 | 2,300,668 | 1,723,901 | 2,549,420 | 1,914,537 | 802,573 | 714,407 | 373,271 | 319,794 | 348,978 |
| | | | | | | | | | | |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73 Contd'**

**2. Cadbury Nigeria Plc**

| Years/ Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 35,760,753 | 33,550,501 | 34,110,547 | 29,170,534 | 25,585,571 | 24,298,496 | 19,937,000 | 19,215,152 | 29,454,185 | 22,152,651 |
| Capital Employed | 23,994,931 | 20,039,359 | 16,589,171 | 12,900,437 | 13,155,696 | 3,012,770 | 34,822,000 | 2,186,795 | 10,868,170 | 9,459,727 |
| **Total V. A** | 14,589,302 | 12,514,264 | 11,757,563 | 8,794,580 | 7,666,246 | 6,166,538 | 3,751,932 | 6,272,791 | 8,793,649 | 7,857,919 |
| Salaries/ Wages | 5,336,250 | 4,793,070 | 5,193,669 | 4,464,690 | 5,030,876 | 5,355,929 | 4,691,471 | 4,060,563 | 3,429,654 | 3,008,209 |
| Tax | 1,398,258 | 1,987,443 | 1,382,467 | 784,392 | (1,143,523) | (95,435) | 3,470,970 | 2,182,659 | 894,347 | 545,169 |
| Dividend | - | - | - | - | - | - | - | - | 1,303,154 | 1,601,345 |
| Depreciation | 1,710,308 | 1,445,972 | 1,409,084 | 2,320,570 | 2,2303,380 | 1,448,878 | 1,386,246 | 905,863 | 425,480 | 322,270 |
| Reserves | 6,023,219 | 4,287,779 | 3,706,710 | 1,180,587 | (1,239,571) | (2,689,742) | (721,304) | 1,051,000 | 1,401,333 | 1,207,344 |
| Interests Paid | 69,334 | Nil | 52,452 | 4,404 | 2,815,084 | 2,146,908 | 1,866,486 | 1,884,171 | 1,901,855 | 682,101 |
| Minority int. | - | - | - | | | | | | - | - |
| Amortisation | 51,933 | 18,385 | 13,181 | 12,544 | - | - | - | - | - | - |
| D.Taxation | - | - | - | - | - | - | - | | 247,826 | 491,481 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73:   Contd'**

**F. Brewery**

**1. Nigerian Breweries Plc.**

| Year/ | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| Variables | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| GR | 268,613,518 | 253,674,213 | 226,228,791 | 185,862,785 | 164,206,848 | 145,461,762 | 111,748,297 | 86,322,075 | 80,130,968 | 73,594,134 |
| CE | 112,359,185 | 93,447,892 | 78,304,741 | 50,172,162 | 46,570,094 | 32,229,181 | 43,183,042 | 36,249,393 | 34,724,241 | 28,253,944 |
| **Total Value Added** | 116,509,322 | 105,361,815 | 103,701,049 | 83,656,201 | 78,764,457 | 71,452,967 | 62,217,094 | 47,112,153 | 43,340,324 | 38,340,324 |
| Taxation/Duties | 19,159,968 | 17,581,652 | 37,398,532 | 30,565,033 | 28,906,104 | 26,306,902 | 24,922,136 | 19,256,957 | 17,226,506 | 14,061,736 |
| Salaries/Wages | 27,645,906 | 23,919,971 | 17,324,786 | 18,324,786 | 17,230,447 | 12,820,792 | 12,826,763 | 10,420,320 | 10,454,012 | 11,016,673 |
| Interest paid | 4,882,661 | 7,261,020 | 1,604,177 | 269,836 | 738,455 | 265,895 | 26,117 | 525,526 | 2,598,233 | 5,413,679 |
| Depreciation | 21,188,510 | 18,151,126 | 8,108,655 | 6,750,627 | 6,794,658 | 6,331,785 | 5,499,222 | 6,008,826 | 4,849,100 | 2,761,829 |
| Amortization | 551,928 | 385,979 | 241,718 | 250,203 | - | - | - | - | - | - |
| Dividends | 22,688,113 | 22,687,687 | - | 8,696,947 | 9,831,331 | 21,931,431 | 12,024,474 | 9,075,075 | 4,915,666 | 3,025,025 |
| Reserves | 43,080,349 | 38,062,067 | 38,023,181 | 21,635,171 | 18,078,760 | 3,769,162 | 6,918,382 | 1,825,449 | 3,338,891 | 2,061,378 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73 Contd'**


**2. Guinness Nig. Plc.**

| Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | |
| Gross Revenue | 122,463,538 | 116,461,882 | 123,663,125 | 109,366,975 | 89,148,207 | 69,172,852 | 62,265,413 | 53,651,781 | 46,859,356 | |
| Capital Employed | 46,039,111 | 38,611,514 | 40,283,492 | 34,199,119 | 31,524,701 | 36,862,557 | 31,638,842 | 25,667,544 | 18,227,442 | |
| PAT ₦'000 | 11,863,726 | 14,671,195 | 17,927,934 | 13,736,359 | 13,541,189 | 11,860,880 | 10,691,060 | 7,440,102 | 4,859,019 | |
| Net Assets per Share | 3,057k | 2,618k | 2,731k | 2,319k | 2,409k | 2,499k | 2,145k | 1,740k | 1,476k | |

| Year | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 |
|---|---|---|---|---|---|---|---|---|---|
| **T. VA** | 40,012,595 | 46,641,358 | 48,790,408 | 42,777,547 | 40,820,836 | 33,348,049 | 32,093,624 | 26,413,023 | 20,616,134 |
| Taxation/duties | 5,109,247 | 6,205,742 | 18,330,019 | 15,531,848 | 8,708,747 | 12,453,939 | 12,258,623 | 10,995,134 | 5,882,985 |
| Wages/Salaries | 9,219,080 | 8,340,142 | 7,117,637 | 7,921,507 | 7,317,750 | 5,470,571 | 4,840,650 | 4,513,646 | 4,549.046 |
| Interest paid | 3,806,649 | 2,093,463 | 564,850 | 1,051,503 | 2,020,201 | 436,705 | 1,539,746 | 787,003 | 1,777,370 |
| Depreciation | 9,995,054 | 7,529,560 | 4,499,168 | 4,053.300 | 3,565,316 | 3,125,954 | 2,763,545 | 2,677,048 | 2,130,566 |
| Amortization | 102,609 | 351,587 | 350,800 | 483,030 | 211,000 | - | - | - | - |
| Dividends | - | - | 14,749,255 | 12,168,136 | - | 6,637,165 | 4,719,762 | 4,719,762 | 3,539,821, |
| Reserves | 11,779,956 | 14,301,431 | 3,178,679 | 1,568,223 | 13,541,189 | 5,223,715 | 5,971,298 | 3,900,281 | 1,319,198 |

**Source:** Firm's Annual Reports & Accounts

**F. Conglomerates**
**1. UAC Nig. Plc**

| Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦ '000 | ₦'000 | ₦'000 |
| Gross Revenue | 78,714,000 | 69,632,000 | 63,588,000 | 52,314,000 | 56,605,000 | 53,652,000 | 31,478,990 | 28,403,2370 | 27,228,700 | 25,116,400 |
| Capital Employed | 82,285,000 | 79,106,000 | 80,524,000 | 74,055,000 | 56,589,000 | 47,760,375 | 34,548,577 | 21,809,000 | 18,781,000 | 15,140,000 |
| **Total Value Added** | 26,462,000 | 20,585,000 | 19,256,000 | 16,454,000 | 16,385,300 | 14,671,100 | 8,771,200 | 9,004,400 | 6,698,100 | 6,531,400 |
| Salaries/Wages | 6,449,000 | 5,537,000 | 7,254,000 | 4,699,400 | 4,665,200 | 2,931,800 | 2,025,700 | 2,112,200 | 2,167,800 | 1,956,600 |
| Taxation | 4,062,000 | 3,642,000 | 3,587,000 | 1,643,700 | 1,447,800 | 1,989,300 | 1,303,600 | 1,074,400 | 915,600 | 768,600 |
| Dividend/Shareholders services | 2,561 | 2,561,000 | 2,401,000 | 1,760,800 | 1,664,700 | - | 2,177,000 | 1,284,600 | 1,284,600 | 971,000 |
| Depreciation | 2,962 | 1,770,000 | 2,837,000 | 2,259,900 | 2,158,00 | 2,039,900 | 1,734,800 | 1,802,600 | 1,486,500 | 1,301,300 |
| Reserves | 3,122 | 1,550,000 | (1,442) | 1,430,100 | 2,354,400 | 1,680,000 | 881,500 | 1,919,000 | 345,300 | 599,200 |
| Interests Paid | 2,995 | 2,532,000 | 1,687,000 | 2,797,300 | 2,195,900 | 922,000 | 331,640 | 329,000 | 318,900 | 854,700 |
| Minority Interest | 4,261 | 2,992,000 | 2,932,000 | 1,760,800 | 1,664,700 | 2,597,700 | 724,500 | 481,900 | 179,400 | 80,000 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73   Contd'**
**2.  PZ CUSSONS Plc.**

| Year/ Variables | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 71,343,088 | 72,154,601 | 65,877,984 | 62,667,910 | 80,974,071 | 65,945,174 | 54,216,824 | 42,225,417 | 34,134,609 | 27,995,035 |
| Capital Employed | 45,118,068 | 43,017,208 | 41,193,341 | 38,707,544 | 35,565,450 | 32,714,196 | 30,567,445 | 28,808,462 | 21,925,758 | 18,701,085 |
| Net Assets | 72,296,420 | 64,406,794 | 68,926,529 | 58,968,513 | 54,896,209 | 36,284,610 | 33,441,360 | 32,594,231 | 25,067,953 | 23,307,760 |
| Net Assets/ Share (k) | 1111 | 1031 | 1297 | 1219 | 1120 | 1030 | 1203 | 1134 | 932 | 1073 |
| | | | | | | | | | | |
| **Total Value Added** | 15,911,240 | 13,765,161 | 16,609,547 | 15,586,271 | 15,004,286 | 14,494,032 | 11,406,774 | 9,542,104 | 8,659,288 | 7,273,837 |
| Wages/Salaries | 6,200,489 | 6,947,662 | 6,707,640 | 5,925,521 | 5,711,374 | 4,494,032 | 5,088,162 | 3,661,407 | 3,314,845 | 2,851,860 |
| Taxation | 2,331,861 | 902,340 | 2,026,824 | 1,810,454 | 2,035,855 | 1,170,295 | 1,420,594 | 918,703 | 897,905 | 906,640 |
| Interests | 217,735 | 670,216 | 125,650 | 142,492 | 271,235 | 412,525 | 114,741 | 188,855 | 107,848 | 367,918 |
| Depreciation | 1,842,751 | 1,840,420 | 1,750,991 | 1,566,810 | 1,350,520 | 1,114,198 | 847,987 | 888,134 | 856,643 | 750,397 |
| Dividend | - | - | - | - | - | - | - | - | 1,633,568 | 1,306,854 |
| Reserve for Bonus Issue | - | - | - | - | - | - | - | - | - | 217,809 |
| Minority interest | 446,447 | 128,384 | 479,536 | 282,900 | 1,967,357 | 2,568,152 | 311,391 | 335,796 | 137,961 | 9,509 |
| Transfer to Reserves | 4,875,040 | 2,410,498 | 5,217,530 | 5,301,742 | 512,289 | 428,977 | 3,512,346 | 3,235,587 | 1,603,605 | 553,182 |
| D.Taxation | 2,783 | 865,677 | 301,376 | 556,325 | 4,818,611 | 3,950,935 | 115,553 | 313,622 | - | 309,668 |

**Source:** Firm's Annual Reports & Accounts

**Appendix 73    Contd'**
**CHELLARAMS  Nig. Plc**

| VARIABLES | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 23,311,109 | 25,000,300 | 23,350,964 | 19,418,308 | 16,145,771 | 14,526,294 | 11,176,801 | 8,857,989 | 7,916,284 | 6,359,627 |
| Capital Employed | 4,529,533 | 3,064,948 | 2,913,368 | 2,786,416 | 2,200,662 | 2,634,728 | 2,277,137 | 2,015,402,912 | 1,521,247 | 1,437,195 |
| | **2013** | **2012** | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** |
| Value Added | 4,458,900 | 4,463,923 | 4,574,260 | 4,854,223 | 4,463,605 | 3,872,700 | 3,357,834 | 2,831,258 | 2,689,526 | 2,615,385 |
| Wages/Salaries | 1,376,444 | 1,234,892 | 1,366,113 | 1,445,222 | 1,355,679 | 1,458,632 | 1,459,820 | 1,311,709 | 1,221,995 | 1,154,737 |
| Taxation | 84,754 | 82,678 | 76,985 | 63,243 | 54,765 | 51,346 | 45,232 | 39,698 | 35,619 | 35,426 |
| Interests | 345,222 | 246,822 | 234,988 | 331,344 | 334,998 | 312,843 | 302,764 | 259,943 | 297,964 | |
| Depreciation | 187,323 | 198,001 | 196,913 | 182,980 | 187,443 | 176,953 | 164,670 | 63,976 | 63,976 | |
| Dividend | - | - | - | - | - | - | - | 36,146 | 27,110 | 18,073 |
| Minority interest | 845 | 907 | 7,914 | 12,915 | 13,008 | 12,843 | 10,093 | (19,455) | (18,238) | 6,656 |
| Reserves | 389,543 | 356,944 | 345,982 | 323,442 | 294,222 | 282,943 | 267,500 | 55,809 | 23,271 | 72,118 |
| D.Taxation | - | - | 23,592 | (234,311) | (244,445) | (123,456) | (107,238) | (4,701) | 37,829 | - |

**Source:** Firm's Annual Reports & Accounts

**Appendisx 73 Contd'**
**D.Personal/ Household Consumables**
 **Unilever plc.**

| VARIABLES | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 | ₦'000 |
| Gross Revenue | 60,004,119 | 55,547,798 | 54,724,749 | 46,807,860 | 44,481,277 | 37,377,492 | 33,990,848 | 25,554,415 | 33,390,940 | 28,576,997 |
| Capital Employed | 9,639,695 | 10,043,524 | 9,634,650 | 8,335,227 | 8,202,734 | 6,681,553 | 5,030,844 | 3,953,348 | 5,570,611 | 6,072,800 |
| **T. Value Added** | 14,943,772 | 15,263,179 | 12,923,727 | 10,836,472 | 10,485,158 | 8,979,482 | 6,673,105 | 4,239,886 | 6,422,109 | 6,653,984 |
| Wages/Salaries | 5,154,272 | 4,536,851 | 3,750,245 | 3,403,324 | 3,503,370 | 3,821,246 | 3,403,006 | 3,206,628 | 2,716,954 | 2,591,552 |
| Taxation | 2,104.534 | 2,588,374 | 2,492,236 | 1,971,235 | 1,567,230 | 1,548,316 | 622,742 | 1,548,316 | 664,959 | 802,798 |
| Interests | 1,132,568 | 816,762 | 273,822 | 327,030 | 631,437 | 239,954 | 645,840 | 239,954 | 835,606 | 621,423 |
| Depreciation | 1,719,454 | 1,615,704 | 916,348 | 954,263 | 689,299 | 770,433 | 824,021 | 770,433 | 588,130 | 470,962 |
| Dividend | - | - | 4,161,625 | 4,048,127 | 2,572,641 | 945,824 | - | 945,824 | - | 2,118,646 |
| Minority interest | - | - | - | - | - | - | - | - | - | - |
| Reserves | 4,832,944 | 5,705,488 | 1,329,451 | 132,493 | 1,521,181 | 1,650,709 | 1,077,496 | 1,650,709 | 1,616,457 | 48,603 |
| D.Taxation | - | - | - | - | - | - | - | - | - | - |

**Source:** Firm's Annual Reports & Accounts