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## INTELLECTUAL CAPITAL COSTS AND MARKET PERFORMANCE OF LISTED SERVICE COMPANIES IN NIGERIA

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### Abstract

*The study examines the effect of intellectual capital costs on market performance of listed services firms in Nigeria. Ex-post facto research design was adopted. Data on human capital, capital employed efficiency, structural capital, earnings per share and dividend per share were collected from published annual reports of 24 listed services firms for the period of 10 years (2009 to 2018). Unit root test, descriptive statistics and panel regression were used to analyse the data. Results reveal that human capital has positive and significant effect on earnings per share of listed services firms in Nigeria while capital employed efficiency and structural capital have negative and insignificant effect on the same dependent variable. The study concludes that human capital is a key component of the three identified intellectual capital cost components and also an indispensable success factor for enhancing market performance of service companies in Nigeria. Hence should be properly handled for the attainment of corporate goals.*

**Key words:** *Intellectual capital costs; capital employed efficiency; human capital; structural capital; earnings per share; dividend per share.*

### Introduction

In the contemporary business world, intellectual capital has taken a central stage unlike in the past centuries where land, labour and capital (financial and physical) took prominence over intellectual capital hence; conventional physical assets were the major determinants of the performance of economic activity (Raze 2011). But advancement in science and technology and of course the globalization has introduced a new production system which is highly driven by high technology, information, innovation-based environment which has taken the centre stage in the global economy (Ekwe, 2013). Suffice to say that under the new technology, knowledge, ability, skills, experience and attitude of workers, assume greater significance even as organizations utilize their intellectual capital (IC) as a critical resource to enhance their financial performance (Ekwe, 2013, Adelakun, 2011).

Firer and Williams (2003) asserted that production or manufacturing companies use intellectual capital with its physical assets to sharpen their competitive edge. Firms which have managed their intellectual capital better have achieved stronger competitive advantage than the general enterprises. (Bornemann, 1999). Intellectual capital management plays an important role on long term business performance of an enterprise (Brennan and Connell, 2000) and as such the

degree of difference between two firms with identical number of physical assets lies in the intellectual management strategies adopted by these firms. Intellectual capital includes skills and knowledge from all levels of a company, and IC has become an essential resource in today's new economy, replacing financial and physical capital. Research on the subject, however, has been hampered by difficulties of intellectual capital measurement as it is intangible, scarce, possessed of unique character and commonly embedded in some other assets (Lev, 2001). Various IC measurement methods are used by the internal and external stakeholders to assess the level of IC of a firm.

The term intellectual capital can be defined as the knowledge-based equity of organization and has attracted a significant amount of practical interest (Campisi & Costa, 2008). Stewart (1997) define intellectual capital as “something that cannot be touched, although it slowly makes you rich. It is all of non-tangible or non-physical assets and resources of an organization as well as its practices, patent and implicit knowledge of its members and their network of patterns and contracts. Intellectual capital includes inventions, ideas, general knowledge, design approaches, computer programmes and publication (Raze 2011). It is a property that is based on knowledge (IFAC, 2001). Suffice to say that Intellectual capital has to do with management of employees, knowledge, experience, skills, customer relation technologies and innovations (Edvinsson and Malone, 1997). Intellectual capital has been recognized as the largest and the most important intangible assets in an organization. Ultimately, it provides the goods or services that customers require or the solution to their problems. It includes the collective knowledge, competency, experience skills and talents of people within an organization. It also includes an organizations creative capacity and its ability to be innovative (Raze, 2011).

Ekwe (2013) opined that despite the shift towards human and intellectual capital-intensive economy, traditional accounting has continued to focus more on the physical assets in their financial statement to the exclusion of the more important assets -the human assets (Armstrong, 2006). Fortunately, human assets belong to a group of assets classified as intangible assets because they represent those innate qualities of people which cannot be seen or touched but which are indispensable for organizational successes and survival Ekwe (2012). Notwithstanding that there are accounting treatments for acquired intangible in the statement of financial position, current financial accounting treats human resource related cost as expenses which reduce profit on the income statement only in the current accounting periods, rather than being reported as assets on the statement of financial position which provide future

benefits. From the above, management is deprived of crucial relevant and timely quantitative data, which enables her to take crucial decisions, regarding her human resources mainly the cost implication of certain decisions. This often results in wrong decisions or no decisions at all concerning workers especially as it affects their welfare and entitlements, thereby causing industrial disharmony. Therefore, this study intends to examine the effect of intellectual capital cost on the market performance of listed service firms in Nigeria with the objective of finding whether intellectual capital cost significantly and positively influences the market performance of listed service firms in Nigeria.

To the researchers' knowledge, there is no study in Nigeria that have considered effects of intellectual capital cost on market performance of listed service firms in Nigeria especially when consideration is given to the fact that service firms used in this study cuts across different sub sectors of the service firms ranging from banking, insurance, communication, hospitality, transportation etc. which need less of physical assets but more of human/intellectual assets.

This study sets to fill the gaps identified above on the effect of on intellectual capital cost on market performance of listed service firms in Nigeria with these specific objectives:

- i. To ascertain the effect of intellectual capital cost (human capital, structural capital and capital employed efficiency) on earning per share of listed service firms in Nigeria.
- ii. To evaluate the effect of intellectual capital cost (human capital, structural capital and capital employed efficiency) on dividend per share of listed service firms in Nigeria.

Accordingly the following hypotheses are formulated:

**HO1:** Intellectual capital cost (human capital, structural capital and capital employed efficiency) has no significant effect on earnings per share of listed service firms in Nigeria.

**HO2:** Intellectual capital cost (human capital, structural capital and capital employed efficiency) has no significant effect on dividend per share of listed service firms in Nigeria.

## **Review of Related Literature**

### **Conceptual framework**

#### **Intellectual Capital**

Intellectual capital can be defined as a group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of this organization by adding value to defined key stakeholders (Khalique, Bontis, Shaari & Isa, 2013).

Khan (2014) asserted that it is the move from “having” knowledge and skills to using the knowledge and skills that is captured in a circuitous way in the literature. That is, the “using” of knowledge implies that relationship (Social capital) and process (structural capital) are needed to transform knowledge (which is owned by individuals) into a product or service that is of value to the firm and its stakeholders. Lee, Wu and Chao (2015) opine that it is the knowledge that can be converted to the value and introduce it as practical experiences, organizational technologies, client relationships and professional skills for achieving competitive advantage. Suffice to say that intellectual capital are those invisible or intangible assets that are hard to qualify into a value and are never reported in financial statement such as skill, workforce and its organization.

Intellectual capital includes inventions, ideas, general knowledge, design approached, computer programmes and publications. Stewart (1997) asserted that intellectual capital is the packaged knowledge; while Fredriksen and Westphalen (1998) states that intellectual capital is skill and knowledge acquired by people during lifetime and which can be used for the production of goods and services. He also, pended that human capital is most often associated with education and on the job training and that depending on the type of skills acquired from school, training or work experience, human capital can be divided into general and specific human capital. General human capital affects the productivity of the trainee in all companies whereas specific human capital raises the productivity only in one enterprise (Ekwe, 2012). He further stated that General human capital is acquired through general education and training programs, which improves the skills and knowledge of workers so that they can work more productively in many enterprises. Specific human capital is acquired through specific training which consists of firm specific training programmes and which improve the trainee’s skills so that his labour productivity is increased only in one particular firm. A perfect example here is training employees to handle some specific machinery which is not used in other companies.

It is good here to say that many of training programme have elements of both a general and specific nature.

Obeidat, Abdallah, Aqqad, Akohoereshiedah and Maqableh (2017) stated that intellectual capital has become a topic of greater interest owing to introduction of new economy (Gan & Saleh 2008). Intellectual capital also called new economy, knowledge economy has shifted attention to intangible assets possessed by organizations and how they are managed. Organizations that operate in new economy, (Intellectual) not physical capital is considered to be an organization's most posed assets (Bramhandkar, Erickson and Applebee 2017; Clarke, Seng and Whiting 2011). The reason for this assertion is that intellectual capital is more important than tangible assets (Chen, Wang and Sun, 2012).

The concept of intellectual has changed considerably overtime. At first, Intellectual Capital (IC) was introduced as the difference between the book value and market value or an organization (Stewart and Stephanie, 1994). Edvinsson and Malone (1997) referred to it as knowledge that can be converted into value. While Stahle and Hong (2002) defined it as capability of creating value when faced with constant change. It is the sum of knowledge used in business operations to gain a competitive advantage (Youndt, Subramaniam & Snell, (2004).

### **Dimensions of Intellectual Capital:**

Different opinions have been expressed about the comprising components and parts of intellectual capital. One of the most welcomed classifications is the classification of intellectual capital into human (Human resources), structural capital (organizational values) and relational capital (relationship) (Chen 2008; Hsu and Fang 2009; Shih, Chang & Lin 2010). Kamukama, Ahiauzu & Ntayi (2010) asserted that these three intellectual capital dimensions are interrelated and hence have a significant influence on a firm's value position and performance. This is supported by Ngag and Ibrahim (2011) who mentioned that intellectual capital must include human capital, structural and relational capitals for organizations to achieve their goals as they are independent and intertwined with each other. For the purposes of this study, the intellectual capital dimensions are human capital, structural capital and relationship capital will be used as measure of intellectual capital.

## **1. Human Capital (HC)**

The term human capital can be described as the sum of employee's competence, knowledge, skills, innovativeness, attitude, commitment, wisdom and experience. Organizations rely on human capital a lot as it helps organizations to respond to environmental changes innovatively (Kong, 2010, Sautos – Rodrigues, Faria, Cranfield and Morais (2013). De Pablos (2003) pointed that importance of human capital lies in its ability to improve the effectiveness and efficiency of organizations and in turn gain a competitive advantage. Human capital consist of the values, attitude and habits or the people in the organization, in addition to the leadership that motivates people to display their potentials in the organization (Tarus and Sitienei, 2015) Worthy of mention here is that human capital differs in organizations which gives the characteristics of being inevitable, rare and non-replaceable. Human capital is not fully controlled by the firm or organization which distinguishes it from the other resources available in the firm (Ngag & Ibrahim 2011, Hussi, 2004, Mention & Bontis 2013). Hence, Chen, Wang and Sim (2012) advised that organizations should continuously invest in their human capital in order to improve their competitive advantage. Human capital theory shows that education leads improvement in workers' level of cognitive skills and consequently increases their productivity and efficiency. Theodore Schultz, Gory Buckert and Jacob Mineer introduced the motion that people invest in education so as to increase their stocks of human capability which can be formed by combining innate ability with investment in human beings. Instances of such investment include expenditures on health, education, motivation and on-the-job training. However, in order to increase the stock of human capital, in a firm period, gross investment must exceed depreciation resulting from intense use or lack of use, with passage of time (Ogujiuba, 2013). The provision of education is seen as a productive human capital investment, an investment which is considered by the proponent of human capital theory are equally or even more equally worthwhile than physical capital investment. It is established by human capital theorists that basic literacy enhances the productivity of workers in low skills occupations. Those theorists further asserted that interment which demands logical and analytical reasoning and which productive technical and specialized knowledge increases the marginal productivity of workers in high skill professions and position. Clarke, Seng and Whiting (2010) asserted that within the value-added intellectual capital model, human capital is defined as the salaries and wages (Public, 1998).

## **2. Structural Capital (SC)**

Edvinsson and Malon (1997) defined structural capital as the hard wares, soft wares, data bases, organizational structure, organization's exclusive rights and all an organization's capabilities that support productivity. It is the mechanisms and structural innovation thereby making it an important organizational resource (Kong, 2010). Santos-Rodrigues, Faria, Cranfield and Morais (2013) asserted that structural capital is used to retain the human capital of organizations. This is due to the fact that structural capital acts as a supportive infrastructure for human capital which provides the necessary environment for individuals to invest their human capital and knowledge (Ngag & Ibrahim, 2011). They asserted that Structural Capital (SC) refers to organizational capabilities that are used to meet internal and external challenges. It is non-human storehouse of knowledge such as organizational culture, routines, data bases, information system, patents, copyrights, trademarks and so on (Sharabati, Jawad & Bontis, 2010; Kianto, Humelinna-Laukkanen & Ritala, 2010). Joshi, Cahill, Sidhu and Kansal (2013) described structural capital as the knowledge that is created and owned by an organization. It is owned by the firm hence, can be traded, reproduced and shared within the firm (Zambon, 2002). Therefore, structural capital is considered the dimension that allows intellectual capital to be measured and developed in an organization (Toth & Jonas, 2012).

## **3. Relational Capital (RC)**

This is defined as formal and informal relations of an organization with external beneficiaries and their understanding about the organization and also exchange of information between their and organization (O'Brien, Clifford and Southern, 2010, Ogbo, Ezeobi & Ituama 2013). Mondal and Ghosh (2012) opine that relational capital is all about the value an organization establishes for its customer, the satisfaction that turns customers on and retains their patronage. It is the knowledge that is embedded in the relationship with any stakeholder that affects the firms' life. Pearse (2009) asserted that relational capital benefits both the organization and its members equally as they both own it. Furthermore, De-Pablos (2003) opined that relationship capital is extremely important in order to actualize the wealth-creation potential of human and structural capital. Hence creating and maintaining relational capital is crucial for having successful organizations (Joshi, Cahill, Sidhu and Kansal, 2013).

### **Attributes of Intellectual Capital (IC)**

Ekwe (2013) itemized characteristics of intellectual capital to include the following:

- Non rival assets: Physical assets can be used for only one thing at a time, but intellectual capital is multiplied. A good example or instance of this is customer support system which can provide support to thousands of customers at the same time. It is this ability to scale with need that makes intellectual asserts far more superior to physical assets.
- Cannot be owned: Human and relational intellectual capitals cannot be owned, but have to be share with employees and suppliers and customers and hence requires careful nurturing to grow these kinds of capital.
- Structural capital is an intangible asset that can be owned and controlled by managers. However, it is cannot be traded easily since not markets exit for this purpose. Moreover, customers do not care about the structural capital of their suppliers since everyone like dealing directly with real human beings rather than with systems.

### **Models of Intellectual Capital Measurement**

Very many models have been developed by a good number of scholars for measuring intellectual capital. However, in this study two of such models will be discussed thus:

#### **Economic Value Added (EVA)**

Economic value added is the difference between net operating income after tax and its cost of capital of both equity and debt. This model was propounded by Mokeloinen (1998). However little attention was paid to it not until 1993 when Fortune magazine in an article unravel a detailed description of EVA. Its focus is on economic profit which measures net profit after deducting a charge to account for the cost of capital utilized to generate this profit. Economic profit is total net gain less the interest on invested capital at the current rate Wallac (1997) as cited in Ekwe (2012). Ezejelue and Ofobuike (1998) opined that EVA discounts to a present value, that portion of the company's future earnings directly attributed to the human resources of the firms. The challenges of this method is that the discounted rate to be used cannot be calculated with high degree of objectivity and how an organization can apportion its earnings to all the factors of production that gave rise to these earnings. Examples of this include patent, finance, capital goods etc.

The central objective of EVA is to determine earnings that are close to cash and hence compare this return to a capital base that is also expressed in cash equivalent terms. The implicit assumption in using EVA is that the future value of a firm is entirely a function of historic

activity. Equity valuation is ultimately the discounted present value of the future equity cash flows and EVA is ultimately still based on historic events (Biddle, Bowen and Wallac, 1997).

### **Value Added Intellectual Coefficient (VAIC)**

Pulic (1998) identified three components of organizational resources using this method which determines the performance of the organization. These components include the physical capital employed, the intellectual capital which according to him is broken down into human and structural capitals. The equation for value added is expressed as  $VA=I+DP+D+T+M+R+WS$  Where VA= Value Added by the firm and is computed as the sum of interest expense.

I= Depreciation expenses, DP= Dividend, D= corporate taxes, T= equity of minority shareholders in the income of subsidiaries, M=profit retained for year, WS= wages and salaries. VA can also be calculated by deducting operating expenses (materials, maintenance, and other external costs from operating revenue). This method has been generally accepted and applied by many intellectual capital researchers such as Badinger and Tondl (2005), Firer and Williams (2003), Pulic (1998, 2000a, 2000b), Chen *et al* (2005), Kamath (2007), Lev and Radhakrishnan (2003), Lev and Zarowin (1999), Lev (2001), Ruta (2009), Yang and Lin (2009) Kamath (2010). This method having a wide acceptability and applicability will therefore be adopted in this study. This method was also adopted by Ekwe (2012) in a similar study.

### **Market performance**

Market performance variables adopted in this study are the following:

#### **a. Earnings per Share (EPS)**

This is the portion of a company's profit allocated to each outstanding share of common stock. Irala (2005) opined that it is a measure of company's per share performance. Earnings per share measures that amount of earnings that are attributed to one share (Emekekwe, 2002). Suffice to say that EPS is a carefully scrutinizing metric that is often used as a barometer to gauge a company's profitability per unit of shareholder ownership hence; it is a key driver of share price. Sawir (2001) stated that EPS is a ratio used to determine how much net income per share. EPS does not include the cost of capital (debt) for the use of debt will lead to a change in earning per share (EPS) and also changes in the risk as these two factors will affect the company's stock price (Brigham and Houston, 2006).

EPS can be calculated as: 
$$\frac{\text{Profit after tax} - \text{preference dividend}}{\text{No of ordinary share capital in issue}}$$

**b. Dividend per Share (DPS)**

This is the sum of declared dividend for every ordinary share issued. Dividend per share is the total dividend paid out over an entire year (including interim dividend but not including special dividends) divided by the number of outstanding ordinary shares Issued. It is the sum of declared dividend for every ordinary share issued. It is an accounting ratio used to evaluate the total number of dividend declared for every share of issued stock. The issued stock taken into account is common stock. Declared dividends are the portion of the company's profit that is paid out to shareholders. However, declared dividends are not equivalent of paid dividends. The amount that is not paid to shareholders is considered retain earnings. In a nutshell, dividend per share is important because it shows returns to the shareholders. It can be calculated thus:

$$DPS = (D - SD) / S$$

Where: D = sum of dividend over a period (usually one year)

SD = special, one time dividends

S = shares outstanding for the period

**Theoretical Framework**

Human Capital Theory: This theory is of the opinion that education increases the productivity and efficiency of workers by enhancing their cognitive skill. The theorist hold prima-facia that people invest in education mainly to increase the human capabilities which is combination of innate abilities with investment in human being (Babalola, 2000, as cited in Adelokun, 2011). It is expedient to state that the stock of human capital increases in a period only when gross investment exceeds depreciation with the passage of time, with intense use or lack of use. Investment in education is productive investment in human capital which the proponents of human capital theory consider to be worthwhile than in physical capital. This means that basic literacy enhances productivity of workers.

In addition, instruction that demands logical and analytical reasoning that provides technical and specialized knowledge increase the marginal productivity of workers in high skill or profession and position. The greater investment in education, the greater the increase in National productivity and economic growth. As the global economy shifts towards more knowledge based sectors (the manufacturers of ICT based services, R&D) skills and human capital development becomes a central issue for policy makers and practitioners engaged in economic development, both at the national and regional levels (OECD, 2008). Yet, the impact of education and vocational training activities exert upon changing national and regional

economics remain less than thoroughly explained and analyzed. Human capital theory views schooling and training as investment in skill and competence (Schultz, 1960 and 1961). It is argued that based on national expectation of return on investment, individuals make decision on education and training they receive as a way of augmenting their productivity.

It is strongly believed by the theorists that a more educated and skilled workforce makes it easier for a firm to adopt and implement new technologies, thus reinforcing return on education and training. This study will adopt this theory as it upholds that investment in education and skill which is intellectual capital improves performance of organizations.

### **Empirical Review**

Clarke, Seng and Whiting (2010) examined intellectual capital and firm performance in Australia. The objective of the study was to find out the effect of intellectual in firm performance in Australia. A sample of Australia companies listed between 2004 and 2008 was used for the study. Intellectual capital was measured using the Pulic's value added intellectual coefficient (VAIC) and its components and both a direct and a moderating relationship between VAIC and performance were analyzed the dependent variable in the study is performance measured by Return on Assets (ROA), Return on Equity (ROE), Revenue growth (RG) and employees productivity (EP), Whereas the independent variable intellectual capital was measured by Human Capital (HC), Structural Capital (SC) and Capital Efficiency Employed (CEE). The result of the study suggests that there is direct relationship between intellectual capital and performance.

The relationship between intellectual capital and financial performance: An empirical investigation in an Iranian company was investigated by Ahangar (2011) with the objective of finding out the relationship between intellectual capital performance and financial performance. The study covered a period of thirty years from 1980- 2009. The data for the study was secondary sourced from the annual reports and accounts of one of Iranian companies. The study employed valued Added intellectual coefficient developed by Ante Pulic to measure intellectual capital. Productivity, profitability and growth rate in revenue and these proxies were measured as Profitability- Return on Assets (ROA) Employees productivity –net sales for the period divided by number of employees and growth in sales is measured as changes in firm's current year sales over last year's sales. A descriptive analysis of the data was also carried out. However, multiple regression analysis of the OLS was employed and the result of the

analysis showed that the relationship between performance of a company's intellectual capital and profitability, employees' productivity, and growth rate in sales are informative. The empirical findings suggest that the performance of a company's intellectual capital can explain profitability and productivity.

Ahmadi, Ahmadi and Shakeri (2011) carried out a survey on relationship between intellectual capital and organizational performance within the national Iranian south oil company with objective to test the relationship between human, structural and relational capitals and organizational performance within the national Iranian south oil company. The study employed the survey approach hence, the sources of data was primary from questionnaires served to 3800 managers, experts and supervisors of the National Iranian South Oil Company out of which 249 managers, experts and supervisors received the questionnaire and 236 responded representing about 94.8%. The study measured intellectual capital by considering the three components of intellectual capital thus human, structural and relational capitals. Organizational performance was measured as organizational performance. The analysis of variance of t-test and Pearson coefficient was used for test of reliability. The result of test hypothesis revealed that there is a positive relationship between intellectual and organizational performance.

Sanchez Salazar and Basilio (2012) carried out a study on intellectual capital and productivity: intellectual capital management as support for financing innovation in small and medium scale enterprises. The objective of the study was to show how both SMEs and financial institutions can benefit from using a commonly agreed intellectual capital report for financing innovative activities. The paper is based on the result of 9 case studies of SMEs from various sectors. The source of data for the study was primary gotten from questionnaire served to 142 respondents from Spanish firms both public and private and the finding of the study revealed that the pattern followed by intangibles management in the studies SMEs and its consequences and that managing intangibles pays off in terms of productivity.

Relationship between intellectual capital and financial performance in the Nigeria banking sector was studied by Ekwe (2012) with the objective of establishing a relationship between intellectual capital and financial performance of Nigeria banks. The study employed Return on Assets (ROA), Return on Equity (ROE), Employees productivity (EP), Market to book value ratio (MB) as measures of financial performance and the Value-Added Intellectual Capital (VAIC) model as developed by Pulic in 1998 was also employed to measure intellectual capital.

The source of data for the study is secondary obtained from the publications of the Nigeria Stock Exchange (NSE) and annual reports and accounts of the selected banks. The population of the study centered on performance indices and market capitalization to book value ratio of the twenty –two Nigeria deposit banks selected from the Nigeria Stock Exchange at the end of 2011. Mainly the new generation banks such as Zenith Bank plc, Diamond Bank plc, Ecobank Plc, and old generation Bank like First Bank plc, Union Bank of Nigeria plc, United Bank for Africa were covered by the study for the period 2000-2011. The tool of analysis adopted in the study is multiple regression analysis. The findings of the study revealed that Return on Assets, Return on equity, employees productivity have a strong positive and significant relationship with the intellectual capital and the study concluded that from the result of the study investment in intellectual do matter.

Badrabadi and Akbarpour (2013) studied effect of intellectual capital and organizational learning process on organizational performance in Iran. The major objective of the study was to examine the effect of intellectual capital on organizational performance while organizational learning was used as a mediating variable in the study. The population of the study includes all the managers and employees of melli banks including people from the main supervising unit and other service branches in the city of Qom and the data were gathered through questionnaire. About 242 individuals were selected as the research sample and information was gathered using systematic random sampling method. The questionnaires consist of 54 questions, 25 of which were designed for measuring the practice of organizational learning process and 8 for measuring organizational performance. The questionnaires relating to intellectual capital were designed based on the three aspects of human capital, structural capital and customer capital. The questionnaires relating to organizational learning process were also designed based on four stages of information, acquisition/creation, information interpretation/transfer, information application and knowledge creation, and information internalization and the questionnaires relating to organizational performance was designed based on two dimensions of financial performance and non-financial performance. To examine the dimensions of research variables and its construct validity, confirmatory factor analysis was first applied and then discriminate validity and convergent validity were calculated. The hypotheses were tested with structural equation modeling. The findings of the study revealed that direct effect of intellectual capital on organizational performance was not very strong, but this variable influenced Melli Banks performance through the mandatory variable “organizational learning process”. The effect of

intellectual capital on organizational learning process was confirmed. Moreover, the study indicated that organizational learning process had a direct and positive effect on Melli Banks performance.

Iranmahd, Moeinaddin, Shahmoradi and Heyrani (2014) examined the effect of intellectual capital on cost of finance and firm value. The objective of the study was to examine whether or not a relationship exists between intellectual capital, cost of capital and firm value and how strong such relationship will be. The study covered all firm listed in Tehran Stock Exchange between 2005- 2012. The data for the study is secondary sourced from annual account and report of the companies listed on Tehran Stock Exchange for eight-year period. In order to measure intellectual capital and valued added applied were used the calculation of which were performed through Pulic's method. The study used the Pearson correlation, univariate and multivariate regression, and Z Wang test. The findings showed that valued added of capital applied, value added of intellectual capital and the value added of intellectual capital coefficient negatively influenced weighted average cost of capital, yet they had no effect on enterprise value.

Orugun and Aduku (2017) investigated intellectual capital and organizational performance in a competitive business environment: A review. The source of data for the study is secondary gotten from journals, conference papers, books, thesis and working papers. The finding of the paper indicates that intellectual capital has a significant influence on organizational performance. Again, it revealed that human capital, structural capital and relational capital are the significant dimensions of intellectual capital that drives organizational performance. The paper concludes that intellectual capital plays a pivotal role in the pursuit and achievement of organization performance, and that the synergy among the three dimensions of intellectual capital is instrumental to organizational performance. The paper therefore suggests that managers should use intellectual capital as strategic approach in the pursuit and achievement of their organizational performance in a competitive business environment, and that they should ensure balance among human structural and relational capitals.

Obeidat, Abdallah, Aqqad, Akhoershiedah and Maqableh (2017) the effect of intellectual capital on organizational performance: The Mediating role of knowledge sharing. The crux of this study was to examine the effect of intellectual capital, knowledge sharing on organizational performance. The methodology for this study is survey. Questionnaires were structured based

on 5 point likert scale and the population of the study consists of all manufacturing companies in Amman, the capital of Jordan which is 1200 and the sample size of the study was 292. Then convince sampling was adopted and for each of the manufacturing companies five respondents were selected randomly. A total of 500 questionnaires were distributed and 383 questionnaires were returned. About 27 of the returned questionnaires were found unusable hence a total of 356 representing 71.2% of the response rate were used. The result of the study showed that intellectual capital has a positive effect on organizational performance and knowledge sharing. It also revealed that knowledge sharing has a positive effect on organizational performance. The study also found out that knowledge sharing as a positive mediating effect on the relationship between intellectual capital and organizational performance.

Oko, Onodi and Tapang (2018) investigated the effect of Intellectual Capital Management on Revenue Generation of Listed Commercial Banks in Nigeria with the objectives of ascertaining the effect of human capital efficiency on revenue growth, to examine the effect of structural capital efficiency on revenue growth and to determine the effect of intellectual capital management on revenue growth. The study employed descriptive research design and the population of the study was the twenty-one listed deposit money banks in Nigeria. Data were gathered via secondary source from Six (6) public annual reports of the listed deposit money banks and analyzed using percentages and ratios. Multiple regressions was employed in data analysis and testing the hypotheses; in determining if there is a significant effect of human capital efficiency, structural capital efficiency and Intellectual Capital management on revenue growth of listed deposit money banks in Nigeria.

The study revealed that Human Capital Efficiency (HCE) has a positive and significant effect on revenue growth; Structural Capital Efficiency (SCE) has a positive but no significant effect on revenue growth and concluded that Intellectual Capital Management has a positive and no significant effect on revenue growth of listed deposit money banks in Nigeria. Based on the findings, the study recommends that management of deposit money banks in Nigeria and the financial service industry should invest in human capital in order to enjoy increase in revenue generation coupled with the need to determine optimally the level of intellectual capital management so that layoff and underutilization would be highly discouraged and for management to strengthen Intellectual capital management in order to enhance improved performance in revenue generation. This study however was very shallow in the sense that its variables measurement was not properly done and failed to capture the three major components

of intellectual capital. From extant literature, most studies on intellectual capital and organizational or financial performance were not based in Nigeria except the study of Ekwe (2012) that studied intellectual capital and financial performance in the Nigeria banking sector. Though this study is in Nigeria, but covers the listed services companies. Again, the scarcity of literature on the subject in Nigeria also necessitated the urgent need for this study.

**Methodology**

The research design for this study is the *ex-post facto* research design which was chosen on the account that the data on intellectual capital cost and market performance of listed service companies in Nigeria already exist in the published financial statements of the companies hence, is not subject to manipulation. The study covered the service rendering companies or service sector of the Nigerian economy. The population of the study is made up of all the listed service companies in Nigeria. According to Nigeria Stock Exchange, there are 52 listed service companies in Nigeria from which a sample size of 24 listed service companies whose shares are traded on the Nigeria Stock Exchange were chosen. Secondary data were sourced from published audited financial statement of the listed service companies in Nigeria for the period 2009-2018. The panel regression technique was employed via the use of E-view 9 to analyse the data. The measurement for dependent variables are Earnings per share (EPS) and Dividend per share (DPS) measuring market performance while the independent variables are Human Capital (HC), Structural Capital (SC) and Capital Employed Efficiency (CEE) measuring Intellectual Capital Cost.

**Model Specification**

This study adapted the econometric model of Basuki (2012) as follows;

$$Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \dots \dots \dots (1)$$

Where  $Y_1$  represents return on assets (performance variables),  $\beta_1, \beta_2, \beta_3$  represent regression coefficient for each independent variables while  $X_1, X_2, X_3$  represent the independent variables Capital Employed Efficiency, Human capital Efficiency and Structural capital Efficiency respectively; and  $\varepsilon$  indicates standard error.

The above model was therefore modified as follows;

$$EPS = f((HC, CEE, SC) \dots \dots \dots (2)$$

$$DPS = f ((HC, CEE, SC) \dots\dots\dots (3)$$

$$EPS = \beta_0 + \beta_1 HC + \beta_2 CEE + \beta_3 SC + \varepsilon_t \dots\dots\dots (4)$$

$$DPS = \beta_0 + \beta_1 HC + \beta_2 CEE + \beta_3 SC + \varepsilon_t \dots\dots\dots (5)$$

Where;

EPS = Earnings per Share

DPS = Dividend per Share

HC = Human capital

CEE = Capital Employed Efficiency

SC = Structural capital

$\varepsilon_t$  = Error term

$\beta_0, \beta_1, \beta_2$  &  $\beta_3$  = Parameters to be estimated

## Result and Discussion

**Table 1: Descriptive Statistics**

Variable	Mean	Median	Minimum	Maximum	Std. deviation	Probability
EPS	0.575545	0.606381	0.000000	1.743980	0.341986	0.181222
DPS	0.451922	0.481443	-0.275724	0.979548	0.271244	0.008392
HC	4.206899	4.481958	0.000000	4.995267	1.163100	0.000000
CEE	1.413787	1.462548	0.000000	1.992730	0.465451	0.000000
SC	4.222957	4.501141	0.000000	5.041701	1.173689	0.000000

**Source: Researchers' E-views Computation, 2020**

The above shows that Earnings per Share (EPS) of the listed service firms in Nigeria has a mean and median value of 0.575545 and 0.606381 with a minimum and maximum statistical value of 0.000000 and 1.743980, while the standard deviation value of 0.341986 was shown in respect of same. EPS is positive but is not significant at five percent level.

Dividend per share has a mean statistical value of 0.451922 and median value of 0.481443. The minimum and maximum statistical value of DPS is shown to be -0.275724 and 0.979548 respectively. The standard deviation value for DPS as shown above is 0.271244 while the probability value of 0.008392 was indicated for same as shown in the table above.

Human capital has a mean value of 4.206899 with a median value of 4.481958. Also, the minimum and maximum values of human capital to be 0.000000 and 4.995267. The standard deviation of 1.163100 was shown in respect of human capital with a probability value of 0.000000.

There is statistical evidence above indicating Capital Employed efficiency (CEE) with a mean and median value of 1.413787 and 1.462548. Again, the minimum and maximum value for CEE is shown to be 0.000000 and 1.992730, while a standard deviation and probability value of 0.465451 and 0.000000 were indicated for same.

Result from the above revealed that the mean and median values for Structural capital (SC) are 4.222957 and 4.501141. Minimum and maximum values for SC are 0.000000 and 5.041701. In addition, standard deviation and probability value of 1.173689 and 0.000000 were indicated for same.

**Table 2: Unit root test**

Variable	Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Prob.**	Conclusion
EPS	-4.29744	-1.93561	73.7135	152.297	0.0000	I(0)
DPS	-4.46578	-1.82487	68.5166	128.168	0.0340	I(0)
HC	1.09002	-1.01624	69.0689	200.958	0.0248	I(1)
CEE	-10.0916	-2.85568	83.5097	159.517	0.0000	I(0)
SC	-17.7104	-4.48385	99.4745	115.620	0.0000	I(0)

**Source: Researchers' E-views Computation, 2020**

Granger and Newbold (1974) have shown that if time series variables are non-stationary, the time series econometric study becomes inadequate. That is, regression coefficients with non-stationary variables would more than likely yield spurious and misleading results. It thus indicates that the times series variables have to be stationary (finite means, variance and auto variance) for them to be valid (Gujarati, 1997). To overcome this problem we test for stationarity of the dependent and independent variables employing the summary Unit Test comprising Levin, Lin, Chu t, Im Pesaran and Sin w-stat, PP and ADF tests. The results of the tests indicates that the balanced panel data of both the dependent and independent variables in our study is stationery at levels and or at first difference. This implies that the stationarity of data have been established hence because is a balanced panel data we can proceeded to regression analysis to establish the relationship between the dependent and independent variables as contained in the study.

**Test of hypothesis one**

**H01:** Intellectual capital cost (human capital, structural capital and capital employed efficiency) has no significant effect on earnings per share of listed service firms in Nigeria.

**Table 3: Regression results of Intellectual capital cost human capital, structural capital and capital employed efficiency) on earning per share of listed service firms in Nigeria**

Dependent Variable: EPS

Method: Panel Least Squares

Date: 10/20/20 Time: 09:03

Sample: 2009 2018

Periods included: 10

Cross-sections included: 24

Total panel (unbalanced) observations: 240

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.199880	0.106417	1.878274	0.0617
CEE	-0.011227	0.050411	-0.222704	0.8240
HC	0.119648	0.059785	2.001300	0.0466
SC	-0.026476	0.059364	-0.445995	0.6561

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.226840	Mean dependent var	0.575545
Adjusted R-squared	0.132018	S.D. dependent var	0.341986
S.E. of regression	0.318613	Akaike info criterion	0.656385
Sum squared resid	21.52102	Schwarz criterion	1.049123
Log likelihood	-51.43799	Hannan-Quinn criter.	0.814648
F-statistic	2.392281	Durbin-Watson stat	1.883804
Prob(F-statistic)	0.000357		

**Source: Researchers' E-views Computation, 2020**

From table above, capital employed efficiency is shown to have a negative and insignificant effect on earnings per share of listed service firms in Nigeria as evidenced with a co-efficient statistical value of -0.011227 and p-value of 0.8240. This find is in contrast with finding of Clarke, Seng and Whiting (2010). Their study was in Australia and not in Nigeria. The study of Ekwe (2012) though was in Nigeria but was in the banking sector which is an integral part of service firms hence; it was not comprehensive as this study.

In addition, human capital was found to have positive and significant effect on earnings per share of listed service firms in Nigeria with a co-efficient of regression value of 0.119648 and

p-value of 0.0466 which is less than 5%. This means that human capital is a very strong determinant of Earnings per share of listed service firms in Nigeria. This finding corroborates the finding of Iranmahd, Moeinaddin, Shahmoradi and Heyrani (2014). Again, there is statistical evidence that structural capital has a negative and insignificant effect on Earnings per share of listed service firms in Nigeria. With a coefficient value of -0.026476 and p-value of 0.6561. This finding is not in line with the study of Ahanger (2011). The reason could be because his study was in Iranian companies not in Nigeria.

As shown in Table above, the adjusted co-efficient of multiple determination of 0.132018 indicates that about 13.20% of the total variation observed in the dependent variable (Earnings per Share) is determined by changes in three predictor variables in our study with about 86.80% of the changes attributable to factors other than the variables in our study. The F- statistic of 2.392281 is significant at 5% level and Durbin Watson Statistic of 1.883304 also highlights the appropriateness of the model specification.

In addition, only human capital out of the three variables is shown to have a significant effect of Earnings per share of listed service firms in Nigeria. We therefore accept the null hypothesis and conclude that intellectual capital (human capital, structural capital and capital employed efficiency) are not significant determinants of Earnings per share of listed service firms in Nigeria.

### **Test of hypothesis two**

**H02:** Intellectual capital cost (human capital, structural capital and capital employed efficiency) has no significant effect on dividend per share of listed service firms in Nigeria.

**Table 4: Regression results of Intellectual capital cost human capital, structural capital and capital employed efficiency) on dividend per share of listed service firms in Nigeria**

Dependent Variable: DPS

Method: Panel Least Squares

Date: 10/20/20 Time: 09:05

Sample: 2009 2018

Periods included: 10

Cross-sections included: 24

Total panel (unbalanced) observations: 240

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.114033	0.083539	1.365038	0.1737
CEE	-0.010133	0.039573	-0.256067	0.7981
HC	0.032690	0.046932	0.696534	0.4869
SC	0.050839	0.046602	1.090934	0.2765

## Effects Specification

## Cross-section fixed (dummy variables)

R-squared	0.242608	Mean dependent var	0.451922
Adjusted R-squared	0.149720	S.D. dependent var	0.271244
S.E. of regression	0.250116	Akaike info criterion	0.172281
Sum squared resid	13.26230	Schwarz criterion	0.565019
Log likelihood	6.412471	Hannan-Quinn criter.	0.330543
F-statistic	2.611840	Durbin-Watson stat	1.648409
Prob(F-statistic)	0.000086		

**Source: Researchers' E-views Computation, 2020**

Evidence from table above indicated that capital employed efficiency has a negative and insignificant effect on dividend per share of listed service firms in Nigeria. This is confirmed with a co-efficient of regression value of -0.010133 and p-value of 0.1737. This means that an increase in capital employed efficiency will certainly lead to a unit decrease in dividend per share of the listed service firms in Nigeria. Our finding in study contrasts the finding of Ekwe (2012). The reason for this is because the study of Ekwe was just in an integral part of the service listed firms in Nigeria but our study is comprehensive in the sense that it covered other sub-sectors in service industry in Nigeria.

Again, human capital has a positive but insignificant association with dividend per share of listed services firms in Nigeria. This is evidenced with co-efficient of regression value of 0.032690 and p-value of 0.4869. This means that an increase in human capital cost will lead to an increase in dividend per share of listed service firms in Nigeria. Our finding contrasts the

finding of Obeidat, Abdallah, Aqqad, Akhoershiedah and Maqableh (2017). The reason could be that their study was not in Nigeria, and of course used primary data which is at the mercy of the researcher(s) and did not also use dividend per share as a measure of market performance.

Structural capital is shown to be positive but insignificant as evidence with a co-efficient of regression value of 0.050839 and p-value of 0.2765. This finding does not corroborate the finding of Bardrabad and Akbarpour (2013). The reason is because their study was carried in Nigeria and also used primary data which can be manipulated by the researcher. More so the duration of the study was too small compared to our study.

The adjusted co-efficient of determination of 0.149720 indicates that about 14.97% of the total variation observed in the dependent variable (Dividend per share) is determined by changes in three predictor variables in our study with about 85.03% of the changes attributable to other factors other than the three factors in our study. The F- statistic of 2.611840 is significant at 5% level and Durbin Watson Statistic of 1.648409 also highlights the appropriateness of the model specification. In addition, all the three variables (human capital, structural capital and capital employed efficiency) is shown to be insignificant determinant of dividend per share of listed service firms in Nigeria. We therefore accept the null hypothesis and conclude Intellectual capital cost (human capital, structural capital and capital employed efficiency) has no significant effect on dividend per share of listed service firms in Nigeria

### **Summary of findings**

This study effects of intellectual capital cost on market performance of listed service firms in Nigeria and made the following findings:

- i. That human capital has positive and significant effect on earnings per share of listed services firms in Nigeria while capital employed efficiency and structural capital have negative and insignificant effect on the same dependent variable.
- ii. That human capital and structural capital have positive but insignificant effect on dividend per share of listed service firms in Nigeria whereas capital employed efficiency showed a negative and insignificant effect.

### **Conclusion and Recommendations**

The study therefore concludes that human capital is a key component of the three identified intellectual capital cost components and also an indispensable success factor for enhancing market performance of service companies in Nigeria. Hence should be properly handled for the attainment of corporate goals. The study recommends as follows;

- i. That listed service firms in Nigeria should prioritize the welfare of its workforce to position the companies for improved performance.
- ii. That listed service firms should ensure that their staff are adequately remunerated in order to maximize their inputs which will boost the marketability of the firms.
- iii. There should be regular training and retraining of the work force to keep them abreast of the modern techniques of rendering their services with little or no stress.
- iv. The office equipment and office settings/environments which are key components of structural capital should be such that would facilitate effective and efficient service delivery.

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