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# Effect of Intellectual Capital on Financial Performance of Banks in Nigeria

Anastesia Nwakaego Duru[1], Innocent Ikechukwu Okpe[2] and Nwosu Nichole[3].

[1]Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria.
[2] Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria
[3] Department of Accountancy, Enugu State University of Science and Technology, Enugu State, Nigeria.

**ABSTRACT**

This study examined the effect of intellectual capital on financial performance of banks in Nigeria. Three research objectives guided this study and they sought to: examine the effect of Human Capital on return on asset; evaluate the effect of Structural Capital on return on asset; and to determine the effect of Capital Employed on return on asset of banks in Nigeria. The study, which adopted the ex-post facto research design, used data from four deposit money banks in Nigeria (First Bank Plc, Diamond Bank Plc, Zenith Bank Plc and United Bank for Africa Plc) covering the periods 2011 to 2015. Descriptive statistics was used for pre-test analysis and regression analysis was used for test of hypothesis. The study revealed that human capital efficiency has positive and insignificant effect on return on assets; structural capital efficiency has positive and insignificant effect on return on assets; and that capital employed efficiency has negative and insignificant effect on return on assets of firms in Nigeria banking sector. Consequently, it was recommended, among other things, that banks in Nigeria should devise a means of improving their human capital efficiency as it has a positive and insignificant effect on performance. Furthermore, they should look for ways that will improve the efficiency of the human capital at their disposal since any negative changes in the human capital efficiency will have an effect on the bank's performance. It was also recommended that structural capital efficiency has a positive and insignificant effect on the return on assets; hence banks in Nigeria should invest very wisely so as to increase their profitability.

Keywords: Intellectual Capital, Financial Performance, and Regression

## INTRODUCTION

In the last two decades of the 20th century an unseen revolution has been found to have taken place in the corporate world. The industrial capitalism- where business is based on tangible physical assets has transformed to a new economy called the 'knowledge economy' where production of goods or services and value creation depends on invisible knowledge assets (intangible assets). In this new economy, the role of knowledge assets becomes important for driving global competitiveness. It is recognized as sustainable strategic assets to acquire and maintain competitive advantages [1]; [2];[3]. According to [4] the importance of intangibles as the major driver of business success can be ascribed to the unique combination of two related economic forces. One is identified as business competition due to globalization of trade and the deregulation of key economic sectors like telecommunication, electricity, transportation and financial services. The second is the advent of information

technology, recently exemplified by the internet. [5], has identified four related forces that contribute to knowledge economics:

- Globalization - which has opened up new markets and new competition;
- Computerization- which acts as the principal factor for spreading of the information technology and the growth of computer networks;
- Economic disintermediation- where natural resources and physical labour have been replaced by knowledge and communication as the new sources of wealth; and
- Intangibilisation - where value is created through the products and services that have no physical reality.

Prusak [6] has identified following factors which are responsible for future success:

- The globalization of the economy which increases the pressure on firms for higher levels of adaptability, innovation and speed;
- The awareness of the value of specialized knowledge, as embedded in organizational process and routines, in coping with the pressures of globalization;
- Low-cost network computing, which enables tools for working with and learning from each other.

According to [7] intangible portion of the economy has grown due to emergence of intangibles like services, information in specialized knowledge databases, services associated with products, emotions in the form of trust and loyalty. [6], states that in the knowledge economy economic value comes from creating, processing, communicating and selling information content than the value added by traditional goods and services. He illustrates that American Airlines make more money from its Sabre reservation system than from their airline operations. Similarly, Ford motor company makes more money from financing cars than making and selling them.

Intangibles, which are considered as the primary construct of knowledge economy, are inherently different from physical and financial assets. These assets non-physical sources of value creation and represent a non-physical claim to future benefits and does not have any physical and financial embodiment. For example, a patent or brand or a unique organizational supply chain that generate cost savings or competitive benefits are intangible assets with non-physical substance [2]. [8] states that intangibles like knowledge, skills, key organizational processes, brand, loyalty, trust and relationship networks are the driving forces of knowledge economy. Therefore, in this new economy knowledge and knowledge base assets form the foundation of the company's capabilities. According to [3] knowledge is today's driver of company life. In the knowledge economy many companies see themselves as learning organizations perusing the objective of continuous improvement in their knowledge assets.

Therefore, in the knowledge economy it is essential that organizations will give greater recognition to their knowledge assets/ intangible assets/intellectual assets for survival and growth. Numerous organizations can be found as knowledge intensive like information technology, consulting firms, law farms, pharmaceutical companies, banking and finance companies and other organizations operating in the service sector which are mainly reliant on their intellectual assets for their success. However, all organizations require intellectual capital to operate and to maintain sustainability in the knowledge economy. Greater reliance on intellectual capital means it will be important for organizations to maximize the value of their intellectual capital and to enhance it continuously.

Intellectual capital is vital for maintaining competitive advantage and is a valuable resource for wealth creation. The importance of intellectual

capital lies in recognizing and utilizing the potential benefits of intellectual capital to open up opportunities for future growth. In this new economy organizational development comes from the maximum utilization of organization's capabilities and competencies. Intellectual capital is one of the main assets of a company because it promotes competitive advantages which form the basis of value creation [9], [10], [11], [12], [13], [14] and [15]. It is not just knowledge. It consists of human, organizational and relational capital. Human capital encompasses tacit and explicit knowledge of employees. It also includes employees' competencies and capabilities in terms of structuring and applying knowledge and skills to perform certain activities. Organizational capital is the extension and manifestation of human capital in the form of codified knowledge, innovation, organizational structure, corporate culture, intellectual property, business processes and physical and financial structure of a firm. It also provide supportive infrastructure to human capital for their performance. Relational capital is the ability to build quality relationships with external stakeholders: customers, suppliers, investors, state and society in general [16], [17], [18], [19] and [20]. Therefore, the IC concept represents a key capabilities and strategic resources as the focus of interest of the resource and knowledge-based theory of firm [21] and [22]. Value of an organization is created with the interaction that takes place between these three elements and physical/tangible capital also. For instance, when individual members (human capital) interact with customers, this sort of relationship creates customer capital of the business organization and which ultimately impacts upon the organizational financial performance. Intellectual resources behave differently from monetary and physical resources. Monetary and physical resources are both additive in nature; that is, if one uses them, one has less left to use and if one invests in them, one has more left to use. Both follow the law of diminishing marginal returns and both are owned and controlled by the organization. The non-imitability of these capabilities and competencies make an organization's intellectual capital valuable and strategically important. Therefore, managing intellectual capital is vital if organizations are to survive in highly competitive markets [11].

This study is a piece of work in the field of intangible assets or intellectual capital. It examines the effectiveness of investment in intellectual capital on performance of banks in Nigeria. That is, the study examines the intellectual capital efficiency and its effect on the corporate financial performance of banks in Nigeria.

## Statement of the Problem

Various research findings have illustrated that intangibles like, knowledge, information, information technology are prime resources in the knowledge economy. Companies have moved away from the industrial age to information but they are still notable to identify measure and manage intellectual capital in their organizations. To create value for the organization, intellectual capital need to be identified, measured and valued and should be attached to the strategy and goals of the company. However, it is difficult to measure since it is intangible and non-physical in nature. In the knowledge economy companies are still following the traditional accounting model, which is invented for companies operating in an industrial economy. Financial statements of the companies prepared following traditional accounting model cover most of the physical and financial assets of the organizations but may ignore intangible assets. But the growing gap between the market value and book value of the companies has motivated the researchers to examine the reason behind it. This gap may be largely justified due to the absence of intangible assets from financial statements.

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

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

## Objectives of the Study

The broard objective of this research is to evaluate the effect of intellectual capital on financial performance of firms in Nigeria banking sector. In a bid to achieve this primary objective, the study must strive to achieve the following specific objective:

1. To examine the effect of Human Capital on return on asset of selected firms in Nigeria banking sector.
2. To evaluate the effect of Structural Capital on return on asset of selected firms in Nigeria banking sector.
3. To determine the effect of Capital Employed on return on asset of selected firms in Nigeria banking sector.

## Statement of Research Questions

Drawing from the above problem and objective of this research, the following questions will guide the discussions of this study:

1. To what extent does Human Capital affect return on asset of selected firms in Nigeria banking sector?
2. To what extent does Structural Capital affect return on asset of selected firms in Nigeria banking sector?
3. To what extent does Capital Employed affect return on asset of selected firms in Nigeria banking sector?

## Statement of Research Hypotheses

In order to achieve the stated objectives and answer the research questions, the following hypotheses have been formulated for this research:

1. Human Capital has no significant effect on return on asset of selected firms in Nigeria banking sector.
2. Structural Capital has no significant effect on return on asset of selected firms in Nigeria banking sector.
3. Capital Employed has no significant effect on return on asset of selected firms in Nigeria banking sector.

## Significance of the Study

This research which centres on Human Resource Accounting (HRA) covers from year 2011 to 2015. It attempts to contribute its own quota to the efforts made by academic communities, accountants and social scientists in trying to establish a valid measurement system for the management and

employees of an organisation since Human Resource Accounting (HRA) is defined as "the human resources identification and measurement process and also its communication to the interested parties." [12].

The study will therefore be of great importance to the following interest groups: individuals, human resource managers, labour unions, accounting regulatory bodies, corporate bodies, the academia, investors, financial and business analysts, the entire business world as well as the Federal Government of Nigeria and its agencies.

The human resource managers and consultants will find the report of this research useful as it will provide information so dearly needed to take rightful decisions concerning their human resources. The study will provide managers with tools for measuring the cost implication of their human resources related decisions. The information in this research will help human resource managers and consultants in formulating policies on human capital management.

The organised labour unions will find the report of this research a ready material for pressing home their demands as it will provide information on the worker contribution to the banks which will be compared to the compensation paid to the workers in form of salaries and allowances thereby providing a basis for salary negotiations with employer of labour.

Accounting bodies such as the Institute of Chartered Accountants of Nigeria (ICAN),the Association of National Accountants of Nigeria (ANAN), the Association of Cost and Management Accountants (ACMA), etc. as well as the accounting regulatory organisations particularly the Financial Reporting Council of Nigeria (FRC),(formerly the Nigeria Accounting Standards Board), will use the information to be provided by this research to produce standards which will be used by organisations in their financial reporting.

Another group of individuals that will find this research very useful are those in the academia. They include the students, scholars, academics, as well as professional researcher. They will from time to time be faced with the challenge of conducting researches on this subject matter and will find this research report a reference material.

Finally, the Federal Government of Nigeria and other human resources Managers will also find this work a reference material for planning, controlling, directing and for corporate decision making. It will also serve as a reference document for policy formulation and implementation by the government and its agencies.

## Scope of the Study

The study covers a period of five years (2011 to 2015) and the researcher made use of the four firms in Nigeria banking sector which are listed on the Nigeria Stock Exchange as at 1st January, 2011 and as at 31st December, 2015. These firms include: First Bank of Nigeria Plc, Diamond Bank Nigeria Plc, Zenith Bank Nigeria Plc, and United Bank of Africa Plc.

## Limitation of the Study

The nature of this study requires that all the variables for the study are in form of ratios calculated from the annual reports and accounts of banks as well as from stock market performances of the Nigeria Stock Exchange. Obtaining these annual reports and the stock market reports were not only very difficult but also very expensive as neither the company nor the regulatory agencies keep these annual reports for a long period of time.

## METHODOLOGY

### Research Design

This paper first identifies the proxies used for the research variables. Data were computed from the annual reports of the banks of study. The paper

adopted the ex-post facto research design since the research relied on historical data generated from annual reports and accounts of the banks as well as data from the publications of the Nigerian Stock Exchange.

**Area of Study**

The research focuses on banks in Nigeria that are publicly quoted firms in the Nigeria Stock Exchange as at 31st December, 2015.

**Sources of Data**

This work adopted the approaches of [3]; [17]; [21] and [5] in the studies. The research therefore, made use of secondary data. Time series data (2011–2015) is extracted from the annual reports and accounts of the selected listed banks. Data with particular importance to review of related literature were gathered from academic journals, libraries, websites and internets. African Institute for Applied Economics (AIAE), the British Council, University of Nigeria Enugu Campus Library, National Library and Enugu State Library.

**Population of the Study**

The population for the study centred on the performance indices of the twenty two (22) deposit banks in Nigerian banking sector, selected from the Nigeria Stock Exchange at the end of 2015.

**Sample Size and Selection Technique**

This research was guided by the availability of Annual Reports and accounts. The population for the study centred on the performance indices and market capitalization to book value ratios of the twenty-two (22) Nigeria deposit banks selected from the Nigeria Stock Exchange at the end of 2015. The researcher was constrained into selecting four (4) deposit banks whose stocks have consistently been very vibrant and active by volume of their stock turnover in the Exchange as well as their market capitalization, and were able to provide data for up to five years. The banks selected include the new generation banks such as: Zenith Bank Plc, First Bank Plc Diamond Bank Plc, UBA Bank Plc,

**Analytical Technique**

This study adopted the descriptive statistic for pre-test analysis, and multiple regressions analytical technique for the test of hypotheses. The analytical technique involve the graphical representation of the movements in dependent and independent variables; descriptive statistics in terms of measures of central tendency, distribution and dispersion; estimated coefficients to evaluate the predictable power of each independent variable on the dependent; coefficient of simple determination (R2) and adjusted coefficient of simple determination.

**Model Specification**

To analyse the respective relationships defined in prior sections multiple regressions analysis is performed based on the following general models as applied in previous studies [2]; [11]. These models will be used to test the hypotheses as follows:

Hypotheses 1, 2, and 3, were respectively tested using equations 1, 2, and 3.

**Hypothesis One**

Hypothesis one states that Human Capital does not significantly affect return on asset of selected firms in Nigeria banking sector.

The Model is specified as:

$ROA_t = \beta_o + \beta_1 HCE_t + \varepsilon_t$ - - - [Equation (1)]

Where,

ROA = Return on Assets

HCE = Human Capital efficiency

$\varepsilon$ = Stochastic disturbance (Error) Term

$\beta_o$ = Coefficient (constant) to be estimated

$\beta_1$ = Parameter of the independent variable to be estimated

t = Time

**Hypothesis Two**

Hypothesis two states that Structural Capital does not significantly affect return on asset of selected firms in Nigeria banking sector.

The Model is specified as:

$ROA = \beta_o + \beta_1 ISCE_t + \varepsilon_t$ - - - [Equation (2)]

Where,

ROA = Return on Asset

SCE = Structural Capital Efficiency

$\varepsilon$ = Stochastic disturbance (Error) Term

$\beta_o$ = Coefficient (constant) to be estimated

$\beta_1$ = Parameter of the independent variable to be estimated

t = Time

**Hypothesis Three**

Hypothesis three states that Capital Employed does not significantly affect return on asset of selected firms in Nigeria banking sector.

The Model is specified as:

$ROA_t = \beta_o + \beta_1 CEE_t + \varepsilon_t$ - - - [Equation (3)]

Where,

ROA = Return on Asset

CEE = Capital Employed Efficiency

$\varepsilon$ = Stochastic disturbance (Error) Term

$\beta_o$ = Coefficient (constant) to be estimated

$\beta_1$ = Parameter of the independent variable to be estimated

t = Time

Equation (1) formalizes the VAIC relationship algebraically:

VAIC = CEE + HCE + SCE---------- [Equation (4)]

Where:

VAIC = VA intellectual coefficient of the bank,

CEE = capital employed efficiency coefficient of the bank,

HCE = human capital efficiency coefficient of the bank and

SCE = structural capital efficiency of the bank.

Pulic (1998) states the higher the VAIC coefficient, the better the efficiency of VA by a firm's total resources. The first step in calculating CEE, HCE and SCE is to determine a firm's total VA.

This calculation is defined by the following algebraic equation:

VA = I + DP + D + T + M + R + WS ---------- [Equation (5)]

Where**:** VA(value added) for the banks are 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,VA can be calculated by deducting operating expenses (materials costs, maintenance costs, other external costs) from operating revenues.[6]. [16] further states that CEE is the ratio of total VA divided by the total amount of capital Employed (CE) where capital employed is defined as the book value of a firm's net assets.

Equation (3) presents the CEE relationship algebraically:

CEE = VA/CE ---------- Equation (6)

Where: CEE = capital employed efficiency coefficient of the banks,

VA = VA of the banks; and

CE = book value of the net assets of the banks.

Consistent with views of other leading Intellectual Capital researchers (for example, [8]; [23] and [16] argues total salary and wage costs are an indicator of a firm's human capital (HC).

HCE, therefore, is calculated as the ratio of total VA divided by the total salary andwages spent by the firm on its employees.

Equation (4) shows this relationship algebraically as follows:

HCE = VA/HC --------- Equation (7)

Where: HCE = human capital efficiency coefficient of the banks,

VA = VA of the banks. and

HC = total salary and wage costs of the banks.

In order to calculate SCE, it is first necessary to determine the value of a firm's structural capital (SC). [8] proposes a firm's total VA less its human capital is an appropriate proxy of a firm's SC. That is:

SC = VA – HC ---------- [Equation (8)]

Where: SC = Structural capital of the banks,

VA = VA of the banks and

HC = total salary and wage expenditure of the banks.

[8] states SCE is the ratio of a firm's SC divided by the total VA. This relationship is shown in Equation (6):

SCE = SC/ VA ---------- [Equation (6)]

Where: SCE = structural capital efficiency coefficient VA of the banks,

SC = Structural capital of the banks; and

VA = VA of the banks.

Recently, VAIC method gain popularity among researchers to measure intellectual ability of companies. [20], supports the adoption of this technique as an effective method of measuring intellectual capital efficiency because:

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

(b) VAIC enabled the collection of evidence of intellectual capital leverage to key success processes;

(c) VAIC was easy to calculate using information already accounted for by a firm and reported in annual reports thus minimizing any additional costs to the preparer and stakeholder;

(d) The methodology used in the calculation of VAIC is relative straight forward that enable greater understanding.

## Description of Research Variables

### Dependent Variable

**Return on Assets (ROA):** Profitability shows the degree to which a firm's revenues exceed its cost. ROA is an indicator of how profitable a company is in relation to its total assets. It gives an idea as to how efficient the management uses assets to generate earnings. It is the ratio of the net income (less preference dividends) divided by book value of total assets as reported in the annual reports;[6]; [3]. ROA= Net Income / Total Assets

### Independent Variables

The Value Added Intellectual Co-efficient (VAI*C*) methodology developed by AntePulic in 1998 formed the underlying measurement basis for the independent variable in this study. It made use of three independent coefficients- Capital Employed Efficiency, Human Capital Efficiency, and Structural Capital Efficiency. In his words, [8] opines that VAIC is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of Value Added by a firm's total resources and each major resource component. VAIC is a composite sum of two major indicators these are:

**(1) Capital Employed Efficiency (CEE)** – indicator of value added efficiency of capital employed;

**(2) Intellectual Capital Efficiency (ICE)** – indicator of value added efficiency of company's Intellectual Capital base. Intellectual Capital Efficiency is composed of two other variables as follows:

**(a) Human Capital Efficiency (HCE)** – indicator of value added efficiency of human capital; and

**(b) Structural Capital Efficiency (SCE)** – indicator of value added efficiency of structural capital. The two sub-components of VAIC form the independent variables in this study.

### Stochastic Disturbances

The stochastic disturbances are those other variables which can also have some degree of influence on the financial performance of a firm but could not be captured in this work.

## DATA PRESENTATION AND ANALYSIS

**Table 1: Data Series for First Bank Nigeria Plc**

| Year | Profit after Tax (₦'million) | Total assets (₦'million) | Capital employed (₦'million) | Salaries and benefits (₦'million) | Properties and equipment (₦'million) |
|---|---|---|---|---|---|
| 2011 | 18,636 | 2,169,073 | 462,956 | 60,447 | 74,474 |
| 2012 | 75,097 | 2,436,886 | 509,251 | 54,621 | 78,489 |
| 2013 | 66,451 | 2,878,693 | 552,638 | 63,012 | 83,404 |
| 2014 | 84,842 | 3,423,819 | 594,353 | 63,672 | 82,351 |
| 2015 | 2,945 | 3,750,327 | 704,465 | 63,392 | 83,357 |

***Source: Researcher's compilation from firm's annual reports.***

In Table 1: the time series data, which are the derivatives of the data to be used were presented.

**Table 2: Log Data Series for First Bank Nigeria Plc**

| YEARS | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| 2011 | 0.024 | 3.06 | 0.673 | 3.388 |
| 2012 | 0.026 | 3.03 | 0.67 | 3.29 |
| 2013 | 0.021 | 3.1 | 0.678 | 3.59 |
| 2014 | 0.012 | 2.64 | 0.622 | 2.496 |
| 2015 | 0.014 | 3.18 | 0.735 | 2.561 |

***Source: Researcher's compilation from sourced data.***

In Table 2, the time series data show the log transformation of the series; return on assets, human capital efficiency, structural capital efficiency, and capital employed efficiency. This was done in order to control the large variances in the variables and made the data fit for additional analysis.

**Table 3 Regression Analysis Result First Bank Plc**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 15.41778 | 10.89720 | 1.414838 | 0.0063 |
| SCE | -36.19334 | 48.02319 | -0.753664 | 0.4620 |
| CEE | 4.418843 | 2.817182 | -1.568533 | 0.0363 |
| C | 5.252330 | 9.654539 | -0.544027 | 0.5939 |
| R-squared | 0.467213 | Mean dependent var | | 4.462500 |
| Adjusted R-squared | 0.389816 | S.D. dependent var | | 5.393294 |
| S.E. of regression | 5.031062 | Akaike info criterion | | 6.245996 |
| Sum squared resid | 404.9853 | Schwarz criterion | | 6.445142 |
| Log likelihood | -58.45996 | Hannan-Quinn criter. | | 6.284871 |
| F-statistic | 1.944820 | Durbin-Watson stat | | 0.968734 |
| Prob(F-statistic) | 0.163084 | | | |

*Source: Researcher's computation using Eviews, 2017*

**Interpretation of Regression Coefficient Result**

Table 6, indicates that a one naira change in HCE and CEE will increase ROA by 15.41778 and 4.418843 respectively. While an increase in SCE will decrease ROA by 36.19334. In summary, ROA is influenced positively by HCE and CEE in varied proportions, and also influenced by SCE negatively. This is the situation in First Bank Nigeria Plc.

**Interpretation of Durbin Watson-Statistic**

The Durbin-Watson statistic is 0.968734 which is not up to 2. In this case, the Durbin Watson statistic is closer to 0 than 2 which indicate the presence of autocorrelation in the series. The result indicates the presence of positive serial correlation in the time series data extracted from the annual report and accounts of First Bank Nigeria Plc.

**Table 4: data series for Diamond Bank Nig. Plc**

| Year | Profit after Tax (₦'million) | Total assets (₦'million) | Capital employed (₦'million) | Salaries and benefits (₦'million) | Properties and equipment (₦'million) |
|---|---|---|---|---|---|
| 2011 | 100,681 | 2,604,504 | 462,956 | 44,605 | 68,782 |
| 2012 | 95,318 | 3,143,133 | 509,251 | 44,565 | 69,410 |
| 2013 | 99,455 | 3,755,264 | 552,638 | 56,864 | 71,571 |
| 2014 | 105,663 | 4,006,842 | 594,353 | 67,848 | 87,022 |
| 2015 | 129,652 | 4,739,825 | 704,465 | 62,428 | 105,284 |

***Source: Researcher's compilation from firm's annual reports.***

In Table 4, the time series data, which are the derivatives of the data to be used, were presented.

**Table 5: Logged Data for Diamond Bank Plc**

| YEARS | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| 2011 | 0.022 | 3.75 | 0.733 | 0.084 |
| 2012 | 0.019 | 3.93 | 0.746 | 0.065 |
| 2013 | 0.011 | 4.5 | 0.778 | 0.069 |
| 2014 | 0.014 | 4.58 | 0.76 | 0.067 |
| 2015 | 0.016 | 4.66 | 0.761 | 0.068 |

***Source: Researcher's Computation, 2017***

In Table 5, the time series data show the log transformation of the series; return on assets, human capital efficiency, structural capital efficiency, and capital employed efficiency. This was done in order to control the large variances in the variables and made the data fit for additional analysis.

**Table 6: Regression Result-Diamond Nigeria Plc**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.019177 | 0.019388 | 0.989163 | 0.3608 |
| SCE | 0.362346 | 0.207081 | 1.749782 | 0.1307 |
| CEE | 0.133323 | 0.088309 | 1.509731 | 0.1819 |
| C | -1269374. | 820037.0 | -1.547947 | 0.1726 |
| R-squared | 0.637933 | Mean dependent var | | 1161100. |
| Adjusted R-squared | 0.456899 | S.D. dependent var | | 841069.1 |
| S.E. of regression | 619829.0 | Akaike info criterion | | 29.80145 |
| Sum squared resid | 2.31E+12 | Schwarz criterion | | 29.92248 |
| Log likelihood | -145.0072 | Hannan-Quinn criter. | | 29.66868 |
| F-statistic | 3.523836 | Durbin-Watson stat | | 2.177745 |
| Prob(F-statistic) | 0.088517 | | | |

**Source: Researcher's computation using E- views, 2017**

### Interpretation of Regression Coefficient Result

Table 10, indicates that a one unit change in HCE, SCE and CEE will increase ROA by 0.019177, 0.362346 and 0.133323 respectively. All the variables have influenced ROA positively. The strength of the effect these variables have on return on asset is positive and insignificant. This is the situation in Diamond Bank Nigeria Plc when considered in isolation.

### Interpretation of Durbin Watson-Statistic

The Durbin-Watson statistic is 2.17774. The Durbin Watson statistic result indicates the absence of serial autocorrelation in the series. The result indicates that there is neither negative nor positive autocorrelation in the time series data extracted from the annual report and accounts of Diamond Bank Nigeria Plc.

### Coefficient of Determination ($R^2$)

The Adjusted R-squared is 0.456899. The adjusted $R^2$ reveals that about 46% of the variations in ROA could be explained by HCE, SCE and CEE while about 54% could be explained by other factors capable of influencing ROA in Diamond Bank Nigeria Plc; such as government influence through price regulation, as well as the error term and the unexplained variables.

**United Bank of Africa (UBA) Plc Table 7: Data series for UBA Nig. Plc**

| Year | Profit after Tax (₦'million) | Total assets (₦'million) | Capital employed (₦'million) | Salaries and benefits (₦'million) | Properties and equipment (₦'million) |
|---|---|---|---|---|---|
| 2011 | 100,681 | 2,604,504 | 462,956 | 44,605 | 68,782 |
| 2012 | 95,318 | 3,143,133 | 509,251 | 44,565 | 69,410 |
| 2013 | 99,455 | 3,755,264 | 552,638 | 56,864 | 71,571 |
| 2014 | 105,663 | 4,006,842 | 594,353 | 67,848 | 87,022 |
| 2015 | 129,652 | 4,739,825 | 704,465 | 62,428 | 105,284 |

***Source: Researcher's compilation from firm's annual reports.***

In Table 7, the time series data, which are the derivatives of the data to be used, were presented.

**Table 8: Logged Data series for UBA Nig. Plc**

| YEARS | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| 2011 | 2.26 | 5.02 | 0.8 | 0.6 |
| 2012 | 2.14 | 5.29 | 0.81 | 0.78 |
| 2013 | 0.74 | 3.33 | 0.7 | 0.64 |
| 2014 | 0.15 | 2.9 | 0.66 | 1.12 |
| 2015 | 0.18 | 2.98 | 0.58 | 1.18 |

***Source: Researcher's Computation, 2017***

In Table 8, the time series data show the log transformation of the series; return on assets, human capital efficiency, structural capital efficiency, and capital employed efficiency. This was done in order to control the large variances in the variables and made the data fit for additional analysis.

**Table 9: Regression Result UBA Nigeria Plc**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.018310 | 0.066406 | 0.275734 | 0.7920 |
| SCE | -0.557504 | 0.277182 | -2.011332 | 0.0910 |
| CEE | 1.563269 | 1.446150 | 1.080987 | 0.3212 |
| C | -1038665. | 1176280. | -0.883008 | 0.4112 |

| | | | |
|---|---|---|---|
| R-squared | 0.462673 | Mean dependent var | -241404.8 |
| Adjusted R-squared | 0.194010 | S.D. dependent var | 425228.1 |
| S.E. of regression | 381756.8 | Akaike info criterion | 28.83213 |
| Sum squared resid | 8.74E+11 | Schwarz criterion | 28.95316 |
| Log likelihood | -140.1606 | Hannan-Quinn criter. | 28.69936 |
| F-statistic | 1.722131 | Durbin-Watson stat | 2.212122 |
| Prob(F-statistic) | 0.261267 | | |

**Source: Researcher's Computation using Eviews, 2017.**

### Interpretation of Regression Coefficient Result

Table 9, indicates that a one unit change in HCE and CEE will increase ROA by 0.018310 and 1.563269 respectively. While a unit change in SCE will result in a decrease of ROA by 0.557504. In summary, HCE and CEE have influenced ROA positively while ROA is affected negatively by SCE. The extent of effect all the variables have on ROA is significant. This is the situation in UBA Nigeria Plc when considered in isolation.

### Interpretation of Durbin Watson-Statistic

The Durbin-Watson statistic is 2.212122 which is closer to 2 than 0. The Durbin Watson statistic result indicates the absence of positive or negative autocorrelation in the series. The result indicates the absence of positive serial correlation in the time series data extracted from the annual report and accounts of UBA Nigeria Plc.

### Coefficient of Determination ($R^2$)

The Adjusted R-squared is 0.194010. The adjusted $R^2$ reveals that about 19% of the variations in ROA could be explained by HCE, SCE and CEE while about 81% could be explained by other factors capable of influencing ROA in UBA Nigeria Plc; such as government influence through price regulation, as well as the error term and the unexplained variables.

**Zenith Bank Plc**

**Table 10: Data Series for Zenith Bank Nigeria Plc**

| Year | Profit after Tax (₦'million) | Total assets (₦'million) | Capital employed (₦'million) | Salaries and benefits (₦'million) | Properties and equipment (₦'million) |
|---|---|---|---|---|---|
| 2011 | **100,681** | **2,604,504** | **462,956** | **44,605** | **68,782** |
| 2012 | **95,318** | **3,143,133** | **509,251** | **44,565** | **69,410** |
| 2013 | **99,455** | **3,755,264** | **552,638** | **56,864** | **71,571** |
| 2014 | **105,663** | **4,006,842** | **594,353** | **67,848** | **87,022** |
| 2015 | **129,652** | **4,739,825** | **704,465** | **62,428** | **105,284** |

***Source: Researcher's Compilation from Firm's Annual Report***

In Table 10, the time series data, which are the derivatives of the data to be used, were presented.

**Table 11: Logged Data for Zenith Bank Nigeria Plc**

| YEARS | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| 2011 | **0.02** | **4.32** | **0.767** | **0.446** |
| 2012 | **0.028** | **5.13** | **0.805** | **1.833** |
| 2013 | **0.012** | **4.99** | **0.8** | **1.934** |
| 2014 | **0.019** | **3.73** | **0.735** | **1.435** |
| 2015 | **0.017** | **3.87** | **0.785** | **1.462** |

***Source: Researcher's Computation, 2017***

In Table 11, the time series data show the log transformation of the series; return on assets, human capital efficiency, structural capital efficiency, and capital employed efficiency. This was done in order to control the large variances in the variables and made the data fit for additional analysis.

**Table 12: Regression Result of Zenith Bank Nigeria Plc**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| HCE | 0.076158 | 0.022609 | 3.368414 | 0.0151 |
| SCE | 0.136840 | 0.072472 | 1.888167 | 0.1079 |
| CEE | 0.042113 | 0.129859 | 0.324296 | 0.7567 |
| C | -605570.3 | 222059.6 | -2.727062 | 0.0343 |

| | | | |
|---|---|---|---|
| R-squared | 0.679109 | Mean dependent var | -52194.90 |
| Adjusted R-squared | 0.518664 | S.D. dependent var | 209408.6 |
| S.E. of regression | 145284.3 | Akaike info criterion | 26.89995 |
| Sum squared resid | 1.27E+11 | Schwarz criterion | 27.02098 |
| Log likelihood | -130.4997 | Hannan-Quinn criter. | 26.76717 |
| F-statistic | 4.232654 | Durbin-Watson stat | 2.835743 |
| Prob(F-statistic) | 0.062934 | | |

***Source: Researcher's computation using Eviews, 2017***

### Interpretation of Regression Coefficient Result

Table 9, indicates that a one unit change in HCE, SCE and CEE will increase ROA by 0.076158, 0.136840 and 0.042113 respectively. In summary, all the variables studied have positive effect on ROA. The extent of effect HCE has on ROA is significant. This is the situation in Zenith Bank Nigeria Plc when considered in isolation.

### Interpretation of Durbin Watson-Statistic

The Durbin-Watson statistic is 2.835743 which is the normality of the statistic. The Durbin Watson statistic result indicates the absence of positive or negative autocorrelation in the series. The result indicates the absence of positive serial correlation in the time series data extracted from the annual report and accounts of Zenith Bank Nigeria Plc.

### Coefficient of Determination ($R^2$)

The Adjusted R-squared is 0.518664. The adjusted $R^2$ reveals that about 52% of the variations in ROA could be explained by HCE, SCE and CEE while about 48% could be explained by other factors capable of influencing ROA in Zenith Bank Nigeria Plc; such as government influence through price regulation, as well as the error term and the unexplained variables.

**Industry Level Analysis**

**Table 13: Time Series for variable Industry Data**

| | Profit after Tax (₦'million) | Total assets (₦'million) | Capital employed (₦'million) | Salaries and benefits (₦'million) | Properties and equipment (₦'million) |
|---|---|---|---|---|---|
| 1. | **18,636** | **2,169,073** | **462,956** | **60,447** | **74,474** |
| 2. | **75,097** | **2,436,886** | **509,251** | **54,621** | **78,489** |
| 3. | **66,451** | **2,878,693** | **552,638** | **63,012** | **83,404** |
| 4. | **84,842** | **3,423,819** | **594,353** | **63,672** | **82,351** |
| 5. | **2,945** | **3,750,327** | **704,465** | **63,392** | **83,357** |
| 6. | **100,681** | **2,604,504** | **462,956** | **44,605** | **68,782** |
| 7. | **95,318** | **3,143,133** | **509,251** | **44,565** | **69,410** |
| 8. | **99,455** | **3,755,264** | **552,638** | **56,864** | **71,571** |
| 9. | **105,663** | **4,006,842** | **594,353** | **67,848** | **87,022** |
| 10. | **129,652** | **4,739,825** | **704,465** | **62,428** | **105,284** |
| 11. | **100,681** | **2,604,504** | **462,956** | **44,605** | **68,782** |
| 12. | **95,318** | **3,143,133** | **509,251** | **44,565** | **69,410** |
| 13. | **99,455** | **3,755,264** | **552,638** | **56,864** | **71,571** |
| 14. | **105,663** | **4,006,842** | **594,353** | **67,848** | **87,022** |
| 15. | **129,652** | **4,739,825** | **704,465** | **62,428** | **105,284** |
| 16. | **100,681** | **2,604,504** | **462,956** | **44,605** | **68,782** |
| 17. | **95,318** | **3,143,133** | **509,251** | **44,565** | **69,410** |
| 18. | **99,455** | **3,755,264** | **552,638** | **56,864** | **71,571** |
| 19. | **105,663** | **4,006,842** | **594,353** | **67,848** | **87,022** |
| 20. | **129,652** | **4,739,825** | **704,465** | **62,428** | **105,284** |

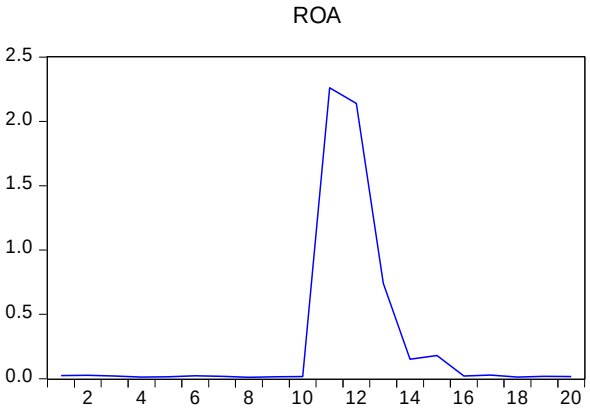
***Source: Researcher's Compilation from firm's annual report***

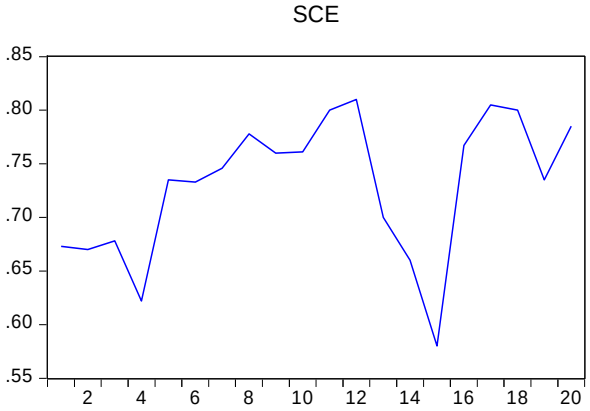
**Table 14: Log Transformation of the Time Series Data of the Variables - Industry Data**

| S/N | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| 1. | 0.024 | 3.06 | 0.673 | 3.388 |
| 2. | 0.026 | 3.03 | 0.67 | 3.29 |
| 3. | 0.021 | 3.1 | 0.678 | 3.59 |
| 4. | 0.012 | 2.64 | 0.622 | 2.496 |
| 5. | 0.014 | 3.18 | 0.735 | 2.561 |
| 6. | 0.022 | 3.75 | 0.733 | 0.084 |
| 7. | 0.019 | 3.93 | 0.746 | 0.065 |
| 8. | 0.011 | 4.5 | 0.778 | 0.069 |
| 9. | 0.014 | 4.58 | 0.76 | 0.067 |
| 10. | 0.016 | 4.66 | 0.761 | 0.068 |
| 11. | 2.26 | 5.02 | 0.8 | 0.6 |
| 12. | 2.14 | 5.29 | 0.81 | 0.78 |
| 13. | 0.74 | 3.33 | 0.7 | 0.64 |
| 14. | 0.15 | 2.9 | 0.66 | 1.12 |
| 15. | 0.18 | 2.98 | 0.58 | 1.18 |
| 16. | 0.02 | 4.32 | 0.767 | 0.446 |
| 17. | 0.028 | 5.13 | 0.805 | 1.833 |
| 18. | 0.012 | 4.99 | 0.8 | 1.934 |
| 19. | 0.019 | 3.73 | 0.735 | 1.435 |
| 20. | 0.017 | 3.87 | 0.785 | 1.462 |

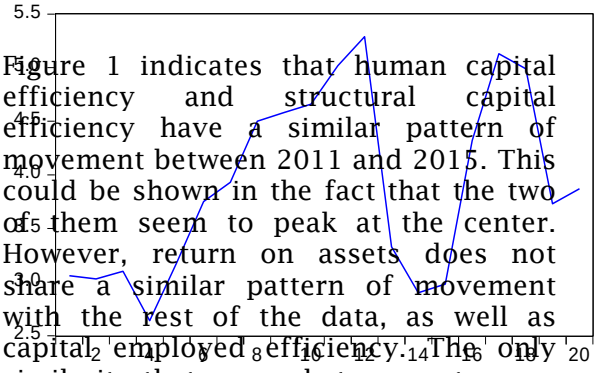
**Source:** ***Author's Computation from Annual Report and Accounts, 2016.***

**Figure 1: Line Graph –Bank Group Data**




***Source: Eviews 9.0 Software***



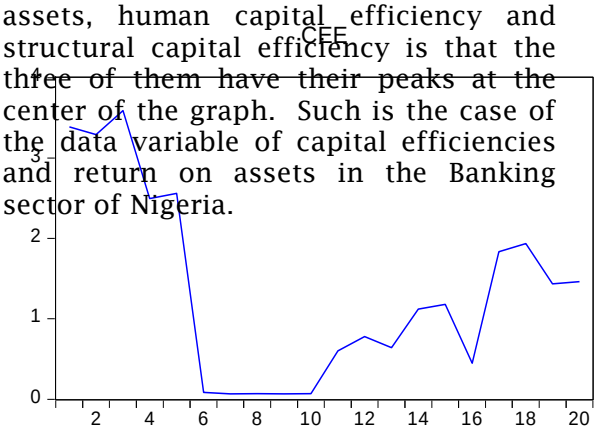




Figure 1 indicates that human capital efficiency and structural capital efficiency have a similar pattern of movement between 2011 and 2015. This could be shown in the fact that the two of them seem to peak at the center. However, return on assets does not share a similar pattern of movement with the rest of the data, as well as capital employed efficiency. The only similarity that comes between return on assets, human capital efficiency and structural capital efficiency is that the three of them have their peaks at the center of the graph. Such is the case of the data variable of capital efficiencies and return on assets in the Banking sector of Nigeria.

**Table 15: Descriptive Statistics - Banking Sector Data Series**

| | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| Mean | 0.287250 | 3.899500 | 0.729900 | 1.355400 |
| Median | 0.020500 | 3.810000 | 0.740500 | 1.150000 |
| Maximum | 2.260000 | 5.290000 | 0.810000 | 3.590000 |
| Minimum | 0.011000 | 2.640000 | 0.580000 | 0.065000 |
| Std. Dev. | 0.674532 | 0.855228 | 0.064976 | 1.187281 |
| Skewness | 2.434076 | 0.190070 | -0.691673 | 0.579914 |
| Kurtosis | 7.239039 | 1.637540 | 2.596257 | 2.090856 |
| Jarque-Bera | 34.72363 | 1.667336 | 1.730546 | 1.809787 |
| Probability | 0.000000 | 0.434453 | 0.420937 | 0.404585 |
| Sum | 5.745000 | 77.99000 | 14.59800 | 27.10800 |
| Sum Sq. Dev. | 8.644878 | 13.89689 | 0.080216 | 26.78308 |
| Observations | 20 | 20 | 20 | 20 |

**Source: Eviews 9.0 Software**

Table 15 shows that the data variables for return on assets and human capital efficiency have skewness value that are above one, while structural capital efficiency and capital employed efficiency have a less than one skewness coefficient. This is an indication that the data variables for the return on assets and human capital efficiency are normally distributed while the data for structural capital efficiency and capital employed efficiency both have abnormal distribution. The kurtosis coefficient confirms that the entire data series are normally distributed. The P-value for the variables of structural capital efficiency is insignificant for the Jarque-Bera statistics while the data variables for human capital efficiency, capital employed efficiency and return on assets are insignificant. This confirms a fairly normal distribution for one variable: return on assets, while human capital efficiency, capital employed efficiency, and structural capital efficiency are not normally distributed.

**Table: 16 Correlation Analysis Banking Sector Data Series**

| | ROA | HCE | SCE | CEE |
|---|---|---|---|---|
| ROA | 1.000000 | 0.434664 | 0.326095 | -0.227262 |
| HCE | 0.434664 | 1.000000 | 0.893373 | -0.517278 |
| SCE | 0.326095 | 0.893373 | 1.000000 | -0.420115 |
| CEE | -0.227262 | -0.517278 | -0.420115 | 1.000000 |

***Source: Researcher's Computation using Eviews, 2017***

Table 16 indicates that a weak, positive relationship exists between returns on assets, human capital efficiency and structural capital efficiency, while a weak negative relationship exists between returns on assets and capital employed efficiency. Returns on assets and human capital efficiency have a positive and significant association but in a fairly large proportion. The strength of the relationship between returns on assets and structural capital efficiency is 43% and this is the strongest association amongst the variables. This implies that structural capital efficiency is stronger in association with returns on assets than the other variables under study. Such is the case in Nigeria Banking sector.

**Table 17: Regression Analysis - Banking Sector Data Series**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 41.91809 | 2.516427 | 0.166581 | 0.8698 |
| HCE | 0.568061 | 0.416541 | 1.363758 | 0.1915 |
| SCE | -3.230984 | 5.170535 | -0.624884 | 0.5409 |
| CEE | 0.448264 | 0.148561 | 0.055630 | 0.9563 |
| R-squared | 0.208263 | Mean dependent var | | 0.287250 |
| Adjusted R-squared | 0.559813 | S.D. dependent var | | 0.674532 |
| S.E. of regression | 0.654048 | Akaike info criterion | | 2.165586 |
| Sum squared resid | 6.844468 | Schwarz criterion | | 2.364732 |
| Log likelihood | -17.65586 | Hannan-Quinn criter. | | 2.204461 |
| F-statistic | 1.402912 | Durbin-Watson stat | | 0.891627 |
| Prob(F-statistic) | 0.278356 | | | |

**Source: Researcher's Computation using Eviews, 2017**

### Interpretation of Regression Coefficient Result

Table 17, indicates that a one naira change in HCE and CEE will increase ROA by 0.568061 and 0.448264 respectively. While an increase in SCE will decrease ROA by -3.230984. In summary, ROA is influenced positively by HCE and CEE in varied proportions, and also influenced by SCE negatively. This is the situation in Nigeria Banking sector.

### Interpretation of Durbin Watson- Statistic

The Durbin-Watson statistic is 0.891627 which is not up to 2. In this case, the Durbin Watson statistic is closer to 0 than 2 which indicate the presence of autocorrelation in the series. The result indicates the presence of positive serial correlation in the time series data extracted from the annual report and accounts of selected Bank in Nigeria.

### Coefficient of Determination ($R^2$)

The Adjusted R-squared is 0.559813. The adjusted $R^2$ reveals that only about 56% of the variations in ROA could be explained by HCE, SCE and CEE while about 44% could be explained by other factors capable of influencing ROA in Nigeria Banking sector; such as government influence through price regulation, as well as the error term and the unexplained variables.

### Test of Hypotheses

### Hypothesis One

**Ho:** Human capital efficiency has no significant effect on return on asset of selected firms in Nigeria banking sector.

**$H_1$:** Human capital efficiency has significant effect on return on asset of selected firms in Nigeria banking sector.

**Decision Rule:** Reject the null hypothesis ($H_0$) if the p-value of the t-statistics is less than 0.05. Otherwise

accept the null hypothesis and reject the alternate hypothesis.

**Table 18: Result of the Regression for Hypothesis One**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 10.49602 | 0.667612 | -1.572173 | 0.1333 |
| HCE | 0.342826 | 0.167422 | 2.047678 | 0.0555 |
| R-squared | 0.188933 | Mean dependent var | | 0.287250 |
| Adjusted R-squared | 0.143874 | S.D. dependent var | | 0.674532 |
| S.E. of regression | 0.624125 | Akaike info criterion | | 1.989707 |
| Sum squared resid | 7.011576 | Schwarz criterion | | 2.089281 |
| Log likelihood | -17.89707 | Hannan-Quinn criter. | | 2.009145 |
| F-statistic | 4.192983 | Durbin-Watson stat | | 0.864166 |
| Prob(F-statistic) | 0.055470 | | | |

**Source: Researcher's Computation using Eviews, 2017.**

**Decision:** Table 18 reveals a P-Value of 0.0555 which is greater than a-value of 0.05; $H_0$ is therefore accepted in respect to return on assets in the banking sector. This implies that human capital efficiency does not significantly affect return on assets of banks in Nigeria banking sector.

**Hypothesis Two**

**Ho:** Structural capital efficiency has no significant effect on return on asset of selected firms in Nigeria banking sector.

**$H_1$:** Structural capital efficiency has significant effect on return on asset of selected firms in Nigeria banking sector.

**Decision Rule:** Reject the null hypothesis ($H_0$) if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

**Presentation and Analysis of Result**

**Table 19: Result of the Regression for Hypothesis Two**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| SCE | 3.385274 | 2.313129 | 1.463504 | 0.1606 |
| C | 21.83662 | 1.694696 | -1.288527 | 0.2139 |
| R-squared | 0.106338 | Mean dependent var | | 0.287250 |
| Adjusted R-squared | 0.056690 | S.D. dependent var | | 0.674532 |
| S.E. of regression | 0.655133 | Akaike info criterion | | 2.086684 |
| Sum squared resid | 7.725598 | Schwarz criterion | | 2.186257 |
| Log likelihood | -18.86684 | Hannan-Quinn criter. | | 2.106122 |
| F-statistic | 2.141845 | Durbin-Watson stat | | 0.875046 |
| Prob(F-statistic) | 0.160574 | | | |

*Source: Researcher's Computation using Eviews, 2017*

**Decision:** Table 19 reveals a P-Value of 0.1606 which is greater than a-value of 0.05; $H_0$ is therefore accepted in respect to return on assets in the banking sector. This implies that structural capital efficiency does not significantly affect return on assets of firms in Nigeria banking sector.

**Hypothesis Three**

**Ho:** Capital Employed efficiency has no significant effect on return on asset of selected firms in Nigeria banking sector.

**$H_1$:** Capital employed efficiency has significant effect on return on asset of selected firms in Nigeria banking sector.

**Decision Rule:** Reject the null hypothesis ($H_0$) if the p-value of the t-statistics is less than 0.05. Otherwise accept the null hypothesis and reject the alternate hypothesis.

**Presentation and Analysis of Result**

**Table 20: Result of the Regression for Hypothesis Three**

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| CEE | -0.129115 | 0.130406 | -0.990096 | 0.3353 |
| C | 46.42252 | 0.232411 | 1.988945 | 0.0621 |
| R-squared | 0.051648 | Mean dependent var | | 0.287250 |
| Adjusted R-squared | 0.301038 | S.D. dependent var | | 0.674532 |
| S.E. of regression | 0.674882 | Akaike info criterion | | 2.146082 |
| Sum squared resid | 8.198388 | Schwarz criterion | | 2.245656 |
| Log likelihood | -19.46082 | Hannan-Quinn criter. | | 2.165520 |
| F-statistic | 0.980291 | Durbin-Watson stat | | 0.960377 |
| Prob(F-statistic) | 0.335251 | | | |

*Source: Researcher's Computation using Eviews, 2017*

**Decision:** Table 20 reveals a P-Value of 0.3353 which is higher than a-value of 0.05; $H_0$ istherefore accepted in respect to return on assets of banks in the banking sector. This implies that capital employed efficiency does not significantly affect return on assets of banks in Nigeria Banking sector.

**DISCUSSION**

**Hypotheses one:** This hypothesis states that human capital efficiency does not significantly affect return on assets of banks in Nigeria Banking sector. From the result of the regression analysis in Table 13, it reveals that human capital efficiency does not affect return on assets significantly in the tune of 0.1333. It also reveals that about 14% of changes in return on assets can be explained by operational cash flow as shown by 0.143874 adjusted R-squared figure. The remaining 86% could be explained by other factors affecting returns on assets other than human capital efficiency in Nigeria.

**Hypotheses two:** This hypothesis states that structural capital efficiency does not significantly affect return on assets of banks in Nigeria Banking sector.

The regression analysis result of Table 14 reveals that return on assets is not significantly affected by structural capital in the amount of 0.1606. The table also depicts that about 5% of changes in return on assets could be explained by structural capital efficiency. The remaining 95% will be explained by other factors not explained in the study. This implies that structural capital efficiency could be used to predict the returns on assets of banks in Nigeria banking industry.

**Hypotheses three:** This hypothesis states that capital employed efficiency does not significantly affect return on assets of banks in Nigeria Banking sector. Capital employed efficiency affects return on assets negatively and insignificantly in the tune of 0.3353 as can be seen in Table 15. The adjusted R-squared revealed that only about 30% of changes in return on asset can be explained by capital employed efficiency in the banking sector.

## SUMMARY OF FINDINGS

1. Human capital efficiency has positive and insignificant effect on return on assets of firms in Nigeria Banking sector.
2. Structural capital efficiency has positive and insignificant effect on return on assets of firms in Nigeria Banking sector.
3. Capital employed efficiency has negative and insignificant effect on return on assets of firms in Nigeria Banking sector.

## CONCLUSION

The principal objective of every bank is to create wealth for its shareholders through dividend payout. Dividend is an end product of profitability. This is to say that the primary objective of a firm is to increase its performance financially. Managements of banks are interested only in positive performance figures which will enable the company achieve its primary objective of wealth creation for its shareholders. This performance in financial terms is affected by both internal and external factors such as government policies as well as the policies of the bank itself. The internal policy includes also interest rate management because of its importance to financial performance of banks. Hence this study evaluated empirically, the effect of capital efficiencies on financial investments, using return on assets as a performance indicator, and the three capital efficiencies; human capital efficiency, structural capital efficiency and capital employed efficiency as the independent variables. After conducting multiple regression as the underlying analytical tool, it was revealed that human capital efficiency positively and insignificantly affects return on assets, meanwhile structural capital efficiency has positive but insignificant effect on return on assets of banks in Nigeria Banking sector. Furthermore, the analysis revealed that capital employed efficiency negatively and insignificantly affects return on assets of banks in Nigeria Banking sector. The adjusted R-squared suggested that only but 56% of changes in return on assets can be explained by these capital efficiencies.

## RECOMMENDATIONS

1. Bank in Nigeria should devise a means of improving their human capital efficiency as it has a positive and insignificant effect on performance. They should look for ways that will improve the efficiency of the human capital at their disposal. This is because any negative changes in the human capital efficiency will have an effect on the bank's performance.
2. Structural capital efficiency has a positive though insignificant effect on the return on assets; hence banks in Nigeria should invest very wisely so as to increase their profitability.
3. As it concerns capital employed efficiency, the study recommends that the management should strategically plan on how to reduce the capital employed because of the negativity of its effect on profit.

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