

## **INTELLECTUAL CAPITAL COMPONENT AND FINANCIAL PERFORMANCE OF QUOTED BANKS IN NIGERIA**

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### **ABSTRACT**

*The research empirically examined the relationship between intellectual capital and financial performance of quoted banks in Nigeria. The study adopted ex-post facto research design. Data used in the study were collected from the published annual financial statements of fifteen (15) commercial banks' websites and the Nigeria Stock Exchange as at December 31, 2016. The researchers also adopted and modified Pulic (1998) Value Added Intellectual Coefficient (VAIC) Model which provided measurement for intellectual capital indices (HCEI) in relation to financial performance. We employed OLS regression tool to analyze the data with the aid of SPSS version 23 and E-view version 9. The findings of this study revealed mixed results as some elements of Intellectual Capital were not significantly related to revenue growth and return on investment. It further depicted that Human Capital Efficiency Index significantly related to return on investment. This study concluded that intellectual capital has not fully related to the financial performance of quoted commercial banks in Nigeria. It is recommended that International Accounting Standards Board (IASBs) should incorporate intellectual capital elements in standards as capital investments instead of being merely expensed in income statement. The study also endorsed the implementation of the International Integrated Reporting Council (IIRC) for full disclosure of intellectual capital in financial statements so as to avoid misleading information and to enhance the quality of financial performance.*

**Keywords:** *Intellectual Capital Component, Financial Performance, Human Capital Efficiency Index, Return on Investment, Accounting Standard.*

## Introduction

Every stakeholder commits resources to an economic entity with the aim of obtaining fair returns on investment. Onifade, Ajulo & Sanyaolu (2016) asserted that the reward attributable to the stakeholders is a function of financial performance that showcases the real value of the entity for the purpose of maximizing the stakeholders' wealth. Financial performance is the measurement of the results of an economic entity's policies and operations in monetary terms with a view to determine its overall financial health over a given time frame (Gaspareto, 2004). The financial performance is normally announced through periodic financial statements and it is targeted at producing complete and reliable information to assist the users to take informed investment decision. Kamaruzaman, Mazlifa & Maisarah (2009) affirmed that financial statements should be capable of revealing relevant, reliable, comparable and comprehensive information. The aim of Generally Accepted Accounting Principles (GAAP) compliance is to ensure that companies prepare accurate financial statements that faithfully represent their financial positions and operating results (Temple, Ofurum & Solomon, 2016).

Financial Performance is thus crucial to any business organisation survival and continues patronage by the stakeholders in the business world. Specifically, financial performance is a natural result of business operations involving the use of both physical capital and intellectual capital. The former refers to tangible assets such as land, machinery, and monetary capital while the latter refers to intangible assets in form of knowledge, creativity, skill, innovation, corporate culture and organizational relationship with external parties which is the key value driver and competitive advantages that really determine the financial performance of any organization in this knowledge-based economy. The ownership of intangible assets especially intellectual capital has becoming more important in this modern era where technology and knowledge have significant roles in company operating activities. Research conducted by Chen and Cheng (2005), Ulum (2007; 2008), & Clarke, Seng & Rosalind (2011) investigate the relationship between intellectual capital and financial performance. The research proves a positive effect on financial performance and the results of research performed by Sunarsih & Mendra (2012), Alghifari & Juhaeni (2013), Sudibya & Restuti (2014) showed that financial performance is positively related to firm value.

In recent times, the stakeholders have been worried over apparent low returns due to nondisclosure of intellectual capital in the annual reports. This worrisome phenomenon is concretized from the simple fact that intellectual capital in knowledge economy is viewed as key value drivers for competitive advantage and efficient financial performance (Hermans & Kauranen, 2005). Commercial banks enhance their ability to create value from business activities in terms of revenue growth and return on investment basically through intellectual capital (Ahuja & Ahuja 2012). It is plausible that the inadequate disclosure and improper treatment of intellectual capital investments that are either immediately expensed in the financial statements or arbitrarily amortized may have created the phenomenal gap (Micah, Ofurum & Ihendinihu, 2012). Consequently, the book values of firms with significant

amounts of intellectual capital investments are unrelated to the market values (Amir & Lev, 1996; Brennan, 2001; Lev, 2001; Holland, 2003). The disclosure principle in accounting requires that financial statements present relevant and reliable information devoid of misleading the users in making investment decision.

However, Johnson, Khorana & Reynolds (2002) argued that financial statements cannot be completely devoid of bigotry, since fiscal phenomenon placed in yearly disclosures are continually estimated within the circumstances of Skepticism. Warren & Reeze (2004) assert that “the application of economic disclosure is to assess the economic performance and condition of a business in the search to keep track of managements’ actions and help in making economic decisions.” Similarly, the disclosure principle in accounting requires that financial statements present the most useful amount of relevant information that is necessary in order not to be misleading. The Central Bank of Nigeria, (CBN, 2009) defines full disclosure “as the mandatory financial, operational and management information which financial institutions are required to disclose in the rendition of their periodic returns to the regulatory authorities and the public.” The process has to do with ensuring the integrity of data in the rendition of reports to the supervisory authority and the public in order to enable them ascertain the true financial position and performance of deposit money banks. Over time, financial reports of Nigerian corporate entities have been found to be deficient (Wallace, 1988; Adeyemi, 2006; Nzekwe, 2009), in the sense that they lack vital information that will enable stakeholders make informed decisions. Apart from the studies conducted by the World Bank (2006), disclosure practices by Nigerian companies had been empirically investigated by Wallace (1988), Okike (2000), Adeyemi (2006), Ofoegbu & Okoye (2006); Umoren (2009). Their observation is obviously similar in that they all found the Nigerian corporate reporting practices to be deficient.

Despite its phenomenal importance and heavy investments in intellectual capital, it is not reflected in the financial statements of various organizations simply because of the stand of International Accounting Standard IAS 38 (Intangible Assets). Indeed, these are charged against revenue for the period to reduce income and by extension the value of the business. According to (Guthrie & Yongvanich, 2004; IASB, 2004; Lev, 2001), the recognition of internally generated brands, mastheads, publishing titles, and customer lists in financial statements is prohibited. This implies that the identification and measurement of these intangible assets in organizations are not accommodated by traditional accounting practice. Gallego & Rodriguez (2005) argued that in few instances, traditional intangible assets such as research and development, goodwill and other internally developed assets are recognized in the annual financial statements of companies, but these assets are defined narrowly as mere operational expenses instead of being capitalized. The non-disclosure of these intangible assets in the companies’ annual financial statements has made the role of intellectual capital in business to be insufficiently understood due to distorted information.

Sveiby (1997), Edvinsson (1997), Lynn (1998) viewed intellectual capital as “the main source of value creation in the new economy.” Bontis (2002) define intellectual capital as “the collective knowledge that is rooted in the employees, operational processes and network relations which mutually create value for efficient financial performance of business entities and economic development of the nations.” Similarly, Stewart (1997) defines intellectual capital as “the overall stocks of training, know-how, technology and organisational relations with external parties that are able to create values for a firm.” International Accounting Standards Committee (IASC, 1999) sees intellectual capital as “intangible assets which consist of education and skills, process software and outsiders relationship with firms.” It is widely recognized that with the advent of knowledge based economy, the conventional base sources of competitive advantage that depend on tangible assets in creating firm value and sustaining competitive advantage begun to erode (Pablos, 2002). Intellectual capital is identified as “providing a new source of wealth for businesses in the information age or knowledge economy.” Managements are implored to recognize the importance of their workforces, customer relationships, information systems and corporate cultures in creating value. These are the assets that promise to provide sustained wealth creation, increasingly replacing traditional physical sources of value.

With the paradigm shift of today’s dynamic global business environment into the knowledge economy, academics and practitioners have distinguished intellectual capital as a key value driver that enhances firms’ financial performance (Edvinsson & Malone, 1997; Stewart, 1997; Sveiby, 1997) especially for those operating in knowledge intensive sectors such as technology and service industries (Bontis, 2001; Hermans & Kauranen, 2005). Innovation chiefly creates competitive advantage through intellectual capital rather than tangible assets. Hence, managers in those firms predisposed to invest in knowledge-based resources to achieve and sustain corporate success (Wang, 2008). Guthrie & Yongvanich (2004) opined that “management of firms’ intellectual capital generates more than half of a firms’ value than the production of material goods, in the current economy.”

Ahuja & Ahuja (2012), an efficient utilization of intellectual capital is more crucial for accomplishing success in banking than other industries, asserting that delivering of high quality services by a bank depends on its investment in items related to intellectual capital such as its human resources, brand building, systems and processes. Goh (2005) further states “though physical capital is essential for banks to operate, it is the intellectual capital that determines the quality of services provided to customers.” Therefore, it becomes necessary for banks to manage their intellectual capital as efficiently as possible. Chidierbere (2012) observes that “Nigeria banking industry recognized this fact and has taken some drastic actions in enhancing its intellectual capital base.” The banking industry has been undergoing dramatic changes over the last decade, with both structural and technological advances pressing top management to rethink their business strategies. This

action has really paid off as the Nigeria banking sector particularly commercial banks in Nigeria has witnessed huge transformation in the last few years. Customers of banks now receive quick and improved services from their banks. Also, the use of automated teller machines (ATMs), internet and mobile banking facilities have decongested the banking halls of most banks in Nigeria thereby saving a lot of man hours. Besides, customers can also obtain banking services from the comfort of their homes. This is as a result of the deep competitive pressure, which arises from changes in the financial environment, technological advancements and the needs of the consumers in terms of product quality.

Therefore, highly skilled individuals are needed to facilitate the delivery of high value-added products and services as well as the competencies to build consumers' confidence and trust to anticipate and respond to these demands and expectations (Mavridis, 2004). Similarly, Abernathy (2003) opines that investment in intellectual capital yields twice returns as compared to the same amount of investment in physical assets. The top ranked 10 Asian companies between the periods of 1995 to 2001 were those companies that create value to their shareholders through intellectual capital (Salamudin, 2010). Indeed, these companies' investments are focused on human capital and network effect rather than physical assets such as plant and machineries (Tseng and Goo, 2005). Thus, the hidden value omitted from financial statements, which may help to explain the growing gap between firms' market and carrying values, requires a valuation model (Gallego & Rodriguez, 2005). As a response to the inadequate provisions of accounting standards and imperfection of traditional accounting practices about intellectual capital, several models to measure intellectual capital and its performance have been developed by various scholars such as the Balanced Scorecard (Kaplan & Norton, 1992), Skandia intellectual capital Report Model (Edvinsson & Malone, 1997), economic value added (Stewart, 2006), Value Added Intellectual Coefficient (VAIC) Model (Pulic, 1998), and Intangible Asset Monitor Approach (Sveiby, 1997). Among these models, Pulic's VAIC model is widely adopted by academics and practitioners as a method to reflect the market value of corporations. It provides a standardized and integrated measure, which allows cross-organizational or cross-national comparison and analysis (Young, 2009).

Shiu (2006) argued that Pulic's VAIC model cannot measure all components of intellectual capital as it excluded relational capital. VAIC model only measures two components of intellectual capital namely human capital and structural capital. This inadequacy was later enhanced by Ulum, Ghazali, & Purwanto (2014) who developed Modified VAIC (MVAIC) by adding relational capital efficiency (RCE) to that of Pulic, 1998. However, this current study pertinently observed and realized that the retention of capital employed in both (Pulic, 1998) and (Ulum et al., 2014) remained problematic as capital employed is not a component of intellectual capital. The stakeholders therefore require a reliable, accurate, and adequate measure of intellectual capital which objectively reflects its intrinsic

components and sufficiently demonstrates its true influence on company value creation and financial performance to take informed investment decisions. Besides, many studies on the relationship between intellectual capital and financial performance have been carried out in the developed economy with conflicting results (Bontis, 1996). It is against this background that this study was carried out to fill these phenomenal gaps by empirically examined the relationship between intellectual capital and quoted commercial banks in Nigeria.

The rest of the paper is organized as follows. The next section briefly surveys the relevant literature and specifies the main hypotheses of this study. Section three describes the procedure (methods) adopted for the empirical analysis. Section four present the main results and the discussion of the empirical investigation. Section five is concluding remark and recommendations.

### **Literature Review and Hypotheses**

Actor-Network theory explains the mechanism of interactions between employees (human) and organizations' technical/mechanical/physical/IT infrastructure (non-human) and the resultant web of relationships amongst them, also called networks. In order to be effective, these networks in the organization need to act as a coherent whole and the relations amongst them need to be repeatedly (continuously) performed, otherwise the network will dissolve, or may lead to conflict. The employees and the organizations' infrastructure (artifacts & technology) together are called 'actors' and the variety of relationships they develop are the 'networks'. The network ties together the alliance of employees and the organizational environment. A network passes three dynamic phases; Emergence, Development & Stabilization (Callon, 1986). Any change indicates suspending the current network and creating new ones. ANT acts as an effective tool to reveal the complexities of our socio-technical world and for describing the processes by which inventions and technological systems come into being, or fail to materialize in the market.

From the foregoing however, this study was anchored on the knowledge –based view theory as knowledge workers being integral part of human capital fundamentally determines the overall financial performance of the firm through the synergy of interaction, integration and coordination of other resources of the business entity.

### **Intellectual Capital**

Intellectual capital has always existed in human societies. However, it has particularly been considered as an important asset in the last few decades. Galbraith (1996) sees intellectual capital "as a form of knowledge, intellect, brain activity which uses knowledge as a source of value creation." Stewart (1997) defines intellectual capital as the total stocks of the collective knowledge, information, technologies, intellectual property rights, experience, organization learning and competence, team communication systems, customer relations, and brands that are able to create values for a firm. Similarly, Sudarsanan, Sorwar and Marr (2003) views intellectual capital as "the group of knowledge assets that are attributed to an

organization and most significantly contribute to an improved competitive position of this organization by adding value to defined stakeholders". Roos & Roos (1997) define intellectual capital as the hidden assets of the company not fully captured on the statement of financial position; while Brennan (2001) defines it as the intangibles such as patents, intellectual property rights, copyrights and franchises. (Holland 2006, Lovingsson 2000, Dzinkowski 1999, Moore (1996) defined intellectual capital as a residual being the difference between book value of the firm and its market value.

This study adopted as operational definition of intellectual capital proposed by Rastogi (2003). According to him, intellectual capital is the "holistic or meta-level capability of an enterprise to co-ordinate, orchestrate and deploy its knowledge resources to create value in pursuit of its future vision" (Rastogi, 2003). This view of intellectual capital reflects the strategic management community's viewpoint of intellectual capital and is the view shared in this study as intangible resources have been documented as performance influencing factors within and across the banking industries (Carmel, 2003; Heeks & Nicholson, 2002). Equally, intellectual capital was also defined as a set of intangibles (resources, capabilities, and competencies) that drives organizational performance and value creation (Bontis, 2000). Other early writers on intellectual capital use management processes terms as their approach to defining the construct. Lynn (1998) states that "Intellectual capital represents knowledge transformed to something of value to the organisation". Booth (1998) argues that intellectual capital is the ability to translate new ideas into products or services and it comprises people related assets, non-people related (market assets) and internal assets. It can be argued, therefore, that intellectual capital represents an intangible resource that has been created or acquired by the firm and can be used to provide future economic benefits to the entity.

### **Human Capital**

Human capital is human ability for problem solving. Bontis (2002) defines human capital as the skills, knowledge and experience of individual employees within an organization. Bontis (1998) has defined human capital as the collective capabilities of an organization in extracting the best solutions using the knowledge of its individuals. Brooking also believes that human assets of an organization include skills, expertise, problem-solving ability, and leadership practices. According to Chen (2004), human capital as the basis of intellectual capital includes the factors (such as knowledge, skills, capabilities and attitudes of employees) leading to improvement of clients' expected performance and company's profitability. In fact, they believe that each employee has a type of skills and knowledge which are an integral part of that employee's mind; if the knowledge and skills are not activated, the employee cannot be used to create value for organization. Although the most important asset of a learning organization is its employees, they cannot be owned by the organization for ever (Stewart, 1997). In the knowledge-based economy the responsible party for the achieved market results is definitely the employees. Who else could customer satisfaction depend on than on the relationship the employees have built? Therefore, *the*

*starting point and end point of business is based on the employees.*

Despite the growing importance of human capital, the amounts spent on development of human resources are still reported as ongoing expense, not capital costs, in financial statements according to the traditional procedure of most organizations (Roslender & Johnson 1998). Therefore, one of the serious consequences of traditional reporting is to motivate organizations to reduce the amount of investment in education and human resources development. Banks rely on stable and long lasting relationships with their clients. Access Bank Plc in 2007 commenced construction of Access Bank Campus otherwise called Access University of Banking Excellence. Wema Bank plc has a policy of sending each staff to relevant training for at least 80 hours in each financial year. These heavy investments to train and retrain quality staff are not reflected in the financial statements of these various organizations. Indeed, they are charged against revenue for the period to reduce income and by extension the value of the business (Micah et al., 2012). Thus currently, the information of human capital is not properly presented on financial statement since no regulations need to be met. This is also due to strict recognition criteria for intangible assets that do not allow human resources to be shown as an asset in the balance sheet (Tayles et al 2002).

### **Financial Performance**

The concept of performance has become a great challenge across the world in recent times. Although several research works had been carried out on performance related issues as it affects organisations or firms but its definition posed a great challenge to researchers. Roger and Wright (1998) assert that performance is probably the most widely used dependent variable in organizational research today, yet it remains one of the most vague and loosely defined constructs. They further confirmed that the struggle to establish a meaning for performance has been ongoing for many years and it is not limited to a particular domain. Similarly, Gavrea, Ilies and Stegorean (2011), confirmed the fact that defining firm performance has been very challenging to researchers because of its many meanings. Watson (2007) defines performance as how well a company uses its resources from its primary mode of business and generates revenues. Performance can also be defined as the accomplishment of specified business objectives measured against known standards, completeness and cost (Davis & Cobb, 2010).

Generally, performance relates to the realization of organisational goals and objectives with minimum resources. Lee, Chen & Lee (2013) suggest that the operational definition of firm performance is that it is an indicator of the overall entity competitiveness, and it is also the degree of the achievement level of an enterprise's strategic objectives. An appropriate firm performance assessment affords its manager the understanding of the status of the organization. Company's financial performance is the natural consequence of operational performance, understood as the final result of all corporate efforts. If the other dimensions related to performance (productivity, efficiency, effectiveness) show measurement

difficulties, these disappear in the case of financial performance, which is a global measure of all the others. Much of the empirical studies that examine financial performance are limited to an analysis based on accounting information because it can be obtained and compared easily. Financial performance is a measure of how well a company uses the invested capital to generate income. This term is usually utilized as a measure of the overall health of the company for a certain period of time, and can be used to compare similar entities in the same industry or to compare industries and sectors. Generally speaking there are currently two categories of methods for measuring financial performance: methods based on the analysis of accounting information and methods based on market value. Performance analysis based on accounting measures uses the annual financial statements as source of information. On this basis there are calculated series of financial ratios covering several quantitative and qualitative aspects of performance: profitability, liquidity, financial structure (debt) and turnover. It is often said that the most important outcome of the activity is, in terms of company owners, the profit. In conclusion, financial performance is usually what matters most, primarily for the company owners (directly) and secondly for all stakeholders (indirectly). Ross, westerfield and Jordan (2008) opined that achieving good financial results is therefore a key objective of any economic entity.

### **Empirical Review**

Some researchers have carried out studies in a bid to x-ray the relationship between intellectual capital and financial performance. The review of previous researches and the finding of researchers, Bontis (2000) in Malaysia, with 107 respondents, presented findings that intellectual capital has a significant and substantive relationship with financial performance regardless of the industry sector. He maintained that human capital is important regardless of the industry type and has greater influence on how a business should be structured in non-service compared to service industries, customer capital has significant influence over structural capital irrespective of industry development of structural capital has a positive relationship with the business performance regardless of the industry.

Riahi–Belkaoui (2003) in the United States of America examines the relationship between intellectual capital and the performance of multi- national companies. The results of the study support the notion that intellectual capital is positively associated with financial performance. Also, Bontis et al. (2007) examine intellectual capital in the pharmaceutical sector of Jordan came up with the conclusion that intellectual capital influences business positively. In their study, Cabrita and Vaz (2006) prove that intellectual capital is substantively and significantly related to the financial performance in the Portuguese banking industry. Similarly, Chen, Lin and Chang (2006) in Taiwan with 159 valid questionnaires received in Taiwan and maintained that the three types of intellectual capital. i.e., human capital, structural capital and relational capital had a significantly positive relationship with new product development performance. Moreover their results also indicated that the higher the growth rate of an industry, the stronger were the positive

relationships between three types of intellectual capital and new product development performance. Moreover, the relational capital was the greatest among these three types of intellectual capital in Taiwanese manufacturing companies. Human capital was the next and structural capital was the least. The results showed that human capital and structural capital of Taiwan's SMEs was obviously less than those of large enterprises. Appuhami (2007) in Thailand with data collected from 33 banking, insurance, and finance companies concluded that firms' intellectual capital has a significant positive relationship with its investors' capital gains on shares. The findings of this study enhanced the knowledge base of intellectual capital and develop a concept of intellectual capital in achieving competitive advantages in emerging economies such as the economy of Thailand.

Maditinos, Chatzoudes, Tsairidis & Theriou (2011) in Greek with data collected from 96 companies listed in the Athens Stock Exchange (ASE) in Greek conducted a study and reported that results failed to support most of their hypotheses and only statistically significant relationship between human capital efficiency and financial performance appeared. The empirical investigation failed to support the hypothesis that investors place higher value on firms with greater intellectual capital.

### **Hypotheses**

H<sub>01</sub>: There is no significant relationship between human capital and revenue growth of quoted commercial banks in Nigeria.

H<sub>02</sub>: There is no significant relationship between the human capital and return on investment of quoted commercial banks in Nigeria.

### **Research Methodology**

### **Empirical Results and Discussion**

#### **4.2: Data Analysis**

##### **4.2.1: Descriptive Statistics**

The study made use of basic descriptive statistics with arithmetic mean as a measure of central tendency instead of median since there are less extreme observations in the data. Standard deviation was also used as the primary measure of variation. Each data was valued and given in the original units, i.e. Nigeria's Naira (₦).

**Table 1: SPSS Descriptive Statistics Extract of quoted commercial banks in Nigeria.**

Variables	Minimum	Maximum	Mean	Std Deviation
HCEI	1.004	25.948	5.26300	4.398701
RG	2.220	99.910	29.68067	28.456357
ROI	.250	41.940	3.38933	5.975227

The table above shows minimum, maximum, mean and standard deviation of predictor and criterion variables in this study. The average Human Capital performance index of the commercial banks remained **5.26** with average revenue growth stood at **₦29.68** billion respectively. This means that on average, the sampled listed commercial banks created value of **₦5.26** for every naira spent on human capital while maximum human capital value added indicated **₦25.95** and revenue growth efficiently maximized **₦99.91**. Also, the sampled listed commercial banks of Nigeria have mean distribution of **₦3.39** return on investment with maximum of **₦41.94** return on investment.

### Stationarity Unit Root Test

Table 2 below shows the ADF stationarity unit root tests output of variables in this study via E-View version 9.

**Table 2: Extract of ADF Stationarity Unit Root Test Output**

Variables	ADF statistic	ADF statistic	ADF statistic	t-Statistic	Prob.*
	% Levels	Diff.	Critical Level.		
HCEI	10%	3 <sup>rd</sup>	-2.902953	-2.588902	0.0679
RG	10%	3 <sup>rd</sup>	-2.590628	-2.203730	0.207
ROI	1%	1 <sup>st</sup>	-3.533204	-3.326853	0.0175

The table above indicates the result of Stationarity using Augmented Dickey Fuller (ADF) unit root test. The results revealed that human capital efficiency index became stationary at the second difference with (ADF t-statistic value of -2.768724 with the test critical value of -2.902953 at 10% level), structural capital efficiency index became stationary at the first difference (ADF t-statistic value of -3.101372 with test critical value of -3.525618 at 5% level) and relational capital efficiency index became stationary at the first difference (ADF t-statistic value of -3.160417 with test critical value of -3.522887 at 1% level). Similarly,

revenue growth became stationary at the third difference (ADF t-statistic value of -2.203730 with test critical value of -2.590628 at 10% level) and Return on Investment (ROI) became stationary at the second difference with ADF t-statistic value of -3.326853 with a test critical value of -3.533204 at 1% level.

#### 4.2.3: Pairwise Granger Causality Tests

Table 3 below shows the Pairwise Granger Causality Tests that exists among the variables in this study and this was achieved with the aid of E-View version 9.

**Table 3: Extract of Pairwise Granger Causality Test Output**

Null Hypothesis	Obs	F-Statistic	Prob.
RCEI does not Granger Cause HCEI	73	1.07429	0.3473
HCEI does not Granger Cause RCEI		0.83441	0.4385
RG does not Granger Cause HCEI	73	0.67822	0.5109
HCEI does not Granger Cause RG		0.369	0.6928
ROI does not Granger Cause HCEI	73	1.71237	0.1881
HCEI does not Granger Cause ROI		3.96819	0.0234

The table above revealed the results of Pairwise Granger Causality Tests aimed at establishing if one variable Granger – cause the other and the direction of the causality. Amongst the elements of intellectual capital; the human capital efficiency index with ( $p < 0.02$ ,  $F = 3.96819$ ) granger cause or exert influence on return on investment. However, other variables are not effective enough by this analysis to exert influence on commercial banks performance but they are positively related to revenue growth and return on investment.

#### Bivariate Analysis

This analysis shows the level of correlation between employed variables and the direction of movement amongst them using Spearman Correlation Coefficient statistical tool with the aid of SPSS version 23.

**Table 4: Extract of Pearson Correlation Matrix**

		HCEI	RG	ROI
HCEI	Pearson Correlation	1.000	.166	.273*
	Sig. (2-tailed)	.	.957	.030
RG	Pearson Correlation	.166	1.000	.229*
	Sig. (2-tailed)	.957	.	.048
ROI	Pearson Correlation	.273*	.229	1.000
	Sig.(2-tailed)	.030	.048	.215

The above table presents the correlation that exists amongst the variables. A cursory look at the table indicated that human capital and relational capital had positive correlations with RG ( $r = 0.166$ , and  $0.144$ ) respectively. However, structural capital had a negative correlation with RG ( $r = -0.049$ ). Similarly, human capital and structural capital revealed positive correlations with ROI ( $r = 0.273$  and  $0.152$ ) respectively while relational capital shown a downhill correlation with ROI ( $r = -0.026$ ). This implies human capital is the fulcrum of commercial banks and for this reason managers of commercial banks pay more attention to quality of HC in order to enhance efficient financial performance and to avoid the risk of high key employee turnover.

**Regression Analysis Model.**

The researcher further progressed to find the relationship between the predictors and the criterion by carrying out a regression exercise as displayed below in table 3 which is a summary of the model estimate extracted from the SPSS statistic 23.0 outputs as can be seen in (appendix xi-xvi).

**Table 5: Extract of the Regression Model Results**

$$FP = \alpha_0 + \beta_1 HCEI + \varepsilon$$

HO	R	R <sup>2</sup>	$\beta$	F	T	Sig
HO <sub>1</sub>	0.166	0.028	0.166	2.081	1.442	0.153
HO <sub>2</sub>	0.273	0.075	0.273	5.882	2.425	0.018

The table above shows poor explanation of r values ( $0.166$ ,  $0.049$ ,  $0.144$ ,  $0.273$ ,  $0.152$  &  $-0.026$ ) in relation to the dependent variables respectively. R-square values present proportion of the variation in financial performance that is attributed to the changes in the explanatory variables. Their R-squared values of ( $0.028$ ,  $0.002$ ,  $0.021$ ,  $0.075$ ,  $0.023$  &  $0.001$ ) were established and these imply that the variations in financial performance were minimally or

not attributed to the changes in the explanatory variables. Put differently, other factors not captured in the study accounted for (97.2%, 99.8%, 97.9%, 92.5%, 97.7% & 99.9%) respective changes in the response variables.

Analysis of Variance (ANOVA) provides information about the predictive ability of the predictor variables within a regression model. F-ratio of 1.0 and above statistically possess the predictive capacity while F-ratio below 1 is weak. From the ANOVA results, the F-ratios (2.081, 0.173, 1.542, 5.882, 1.717 & 0.049) statistically predicted the financial performance because their F-ratios are more than 1. However, 0.173 & 0.049 displayed weak prediction of financial performance.

The coefficients model displays positive relationship as signifies by their respective coefficient of (0.166, 0.049, 0.144, 0.273, 0.152 & -0.026) with exception of relational capital efficiency index. These imply that intellectual capital depicted both positive and negative correlation with the financial performance of quoted commercial banks in Nigeria. Yet, they are found to be statistically insignificant based on their P-values (0.153, 0.679, 0.218, 0.194 & 0.825) levels of significance which are more than standard alpha (0.05) level. However, HCEI had shown significant relationship with return on investment based on their P-Values (0.018) which is less than standard alpha (0.05) level.

**H0<sub>1</sub>: There is no significant relationship between human capital and revenue growth of quoted commercial banks in Nigeria.**

The model summary shows the overall goodness fit of the statistics from table 4.2.6. This indicates that the R of the model is 0.166 with the  $R^2 = 0.028$ . This means that the Human capital efficiency was able to explain 2.8% of changes in revenue growth of commercial bank in Nigeria. Using the above result also, the ANNOVA displays the test of predictability and significance of the model. The output shows that Human Capital Efficiency with F-ratio value (F= 2.081) positively predicted revenue growth of commercial banks in Nigeria. However, it is not statistically significant as the calculated P-value (0.153) is greater than the tabulated P-value (0.05). Furthermore, the results from the coefficients model demonstrates that human capital efficiency index is positively related to revenue growth with  $\beta = .166$  &  $t = 1.442$ . This implies that human capital efficiency contributes positively but it is however not significant because the P-value (0.153) is greater than Alpha (0.05). Since the P-value (0.153) is greater than the Alpha (0.05), the researcher thus accepted null hypothesis and conclude that human capital has no significant relationship with the revenue growth of the commercial banks in Nigeria.

**H0<sub>2</sub>: Human capital has no significant connection with the return on investment of quoted commercial banks in Nigeria.**

Human Capital Efficiency Index shown with  $R=.273$  and  $R^2 =.075$  (7.5%) explained 7.5% of the variation in the response variable (return on investment). In the same way, Human Capital Efficiency Index predicted the Return on Investment well as the F-ratio value ( $F = 5.882$ ) is greater than 1. Correspondingly, the results from the coefficients model depicts that Human Capital Efficiency Index is positively connected to return on investment (ROI) with  $\beta = .273$ ,  $t = 2.425$  &  $P\text{-value} = .018$ . This signifies that human capital really influences the return on investment. Since the P- value (.018) is less than Alpha (0.05), the study rejected the null hypothesis and sufficiently concludes that human capital is highly connected to the return of investment of the commercial banks in Nigeria.

**Summary of findings, Conclusion and Recommendations**

The discoveries of the investigation remain based on the documentary records collected for the period 2011 – 2015 from entire fifteen commercial banks quoted in the Nigeria Stock Exchange (NSE) as at 31st December 2015. It was discovered from the analysis and testing of the six hypotheses that only one of the explanatory variables impacted significantly on financial performance. This indeed is a worrisome situation and thus makes the investigation imperative as can be seen in the table below.

**Table 4: Summary of Results**

<b>H0:</b>	<b>Model</b>	<b><math>\beta</math></b>	<b>T</b>	<b>P</b>	<b>Relationship</b>	<b>Decision</b>
H0:1	$RG = \alpha_0 + \beta_1 HCE + \varepsilon$	0.166	1.442	0.153	Positive but not significant	Accept
H0:2	$ROI = \alpha_0 + \beta_4 HCE + \varepsilon$	0.273	2.424	0.018	Positive and significant	Reject

In line with the analysis and testing of the relationship between intellectual capital as explanatory variable and financial performance of quoted commercial banks whose share are traded in the Nigeria Stock Exchange from 2011 – 2015 as the response variable, the study concludes as stated below that:

Human capital has no significant relationship with revenue growth of quoted commercial banks in Nigeria during the period covered by this study.

Human capital has significant relationship with the return on investment of quoted commercial banks in Nigeria during the period covered by this study.

In line with the findings and the conclusion highlighted above, the following commendations are proposed:

- i. Investments on human capital should be capitalized. Human capital is made up of employee costs which include but not limited to salary, training and staff development, pension contribution and others.
- ii. Banks and other firms should recognise the Intellectual Capital capabilities of their workforce as embedded in their Structural Capital. This would enable them to articulate such capabilities for proper accounting.

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