

## INTELLECTUAL CAPITAL REPORTING AND MEASURES OF FINANCIAL PERFORMANCE OF COMPANIES IN NIGERIA

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### **Abstract**

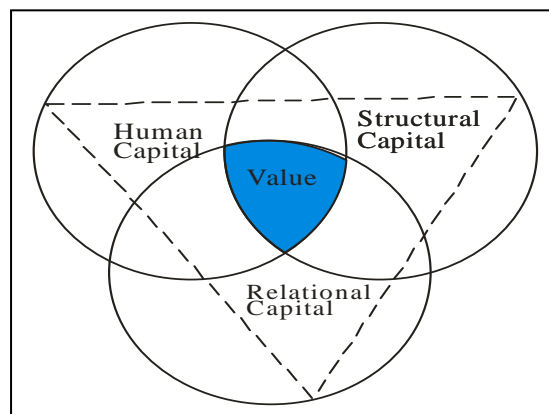
*Over the past few years, intellectual capital reporting has become a key resource for enterprises, but its measurement and reporting represents a major challenge for managers and researchers. The aim of this paper is to empirically examine the relationship between intellectual capital reporting and measures of 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. We also adopted and modified Pulic (1998) Value Added Intellectual Coefficient (VAIC) Model which provided measurement for intellectual capital indices (SCEI) 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 reporting were not significantly related to revenue growth and return on investment. It further depicted that Structural 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:** Structural Capital, Return on Investment, Revenue Growth, Intellectual Capital Reporting, Measures of Performance.

## Introduction

Over the years intellectual capital reporting has been considered by many, defined by few, understood by a selected some and formally valued by practically no one (Bontis, 1998; Bouty, 2000; Ambrosine & Bowman 2001; Chillemi & Gui, 2001; Shia, 2006; Stewart, 2006; Mavrids, 2008; Ahuja & Ahuja, 2012). The growing theoretical interest in intellectual capital reporting coincides with the dawn of the knowledge society and the newly seen importance of its knowledge workers (Parter, 1993; Chidiebere, 2012; Ulum; Chozuli & Purwartu, 2014). It is immensely within this context that many writers discuss the importance for firm survival and performance on human and social capital at the organizational level (Kogat & Zandes, 1996; Shiu, 2006; Young, 2009; Chidiebere, 2012). Strikingly, concepts such as intangible assets, **embedded** tacit routines, core competence, knowledge creation and innovation take center stage in the explanation of the firms assets that continually created value over and above physical and financial resources (Bowman & Ambriosin, 2000; Swert & Bowman, 2003; Goh, 2005; Bontis, 2001; Herfmans & Kuwane, 2005; Wang, 2008). The combination ad integration of these concepts in explaining phenomena such as firm survival (Chidierbere, 2012; Ulumi, 2014) performance (Stewart, 2006; Shiu, 2006), innovation and competitive advantage (Ulumi; Chozali & Purwant, 2014) has lead to a set of concepts that have often been grouped under the umbrella of intellectual capital reporting but on close inspection is found to been defined and applied in rather different ways.

Hermans and Kauranen (2005) posited that through the synergy of interactions and integration among human, structural and relational resources; intellectual capital helps organizations to create distinctive competencies in the judicious utilization of its available resources, thereby enhancing its financial performance and overall value of the firm as seen in fig .1 below.



**Fig.1: Interaction among the Components of Intellectual Capital Reporting**

Intellectual capital is thus seen as the primary value drivers in the modern economy wherein knowledge-based resources are crucial for financial performance and economic development of global nations. Makki & Lodhi (2009) assert that many companies around the globe which adopted intellectual capital strategies earlier were very successful in improving their revenue generation, efficiency and financial performance. However, Maditinos, Chatzoudes, Tsairidis & Theriou (2011) confirmed that findings from a number of studies on the relationship between intellectual capital and financial performance tend to give conflicting results. Some studies shown that intellectual capital helped improving firm

financial performance (Barney, 1991; Bontis, 1998; Bassi & Van Buren, 1999; Bontis, 2000; Pulic, 2000; Appuhami, 2007) as they confirmed a very strong and positive relationship between intellectual capital and financial performance whilst others studies indicated negative results and yet no relationship between intellectual capital and financial performance (Firer and William, 2003; and Chu et. al, 2011) respectively. These varied conclusions result in unsettled argument. Besides, the most celebrated and widely used value added intellectual coefficient (VAIC) model by Pulic (1998) to measure intellectual capital has completely ignored relational capital as a component of intellectual capital. To worsen it all, he substituted it with capital employed which is rooted from relational capital and more importantly, it has not been mentioned anywhere in the extant literature as a component of intellectual capital by any scholar. 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 remainder of the present paper is organized as follows: Section two briefly describes the theoretical and conceptual framework for both intellectual capital reporting and financial performance and outlines related prior research and the different research hypotheses. Section three describes the methodology used in this study and the empirical results of the data analysis are detailed in section four. The final section ideally summaries; conclude and recommends with limitation and suggestion for further study.

## **Review of related literature and Hypotheses**

### **Knowledge-Based View Theory**

Knowledge is the life-wire of the financial performance of any organisation such that it is unique, valuable, rare and not easy to replicate as it provides the firm with a capability and competence needed to achieve a competitive advantage via knowledge workers who are embodied in the human capital and structural capital of the firm. Drucker (1999b) states that the most important contribution management needs to make in the 21st century are similarly to increase the productivity of knowledge worker. The knowledge-based view of the firm identifies the primary rationale for the firm as the creation and application of knowledge (Demsetz, 1991; Nonaka, 1994; Grant, 1996; Pender, 1996). The transition of society from the industrial era to the knowledge era has shifted the importance from tangible assets to intangible ones. Hall (1992) in a survey of CEOs found that employee know-how and reputation were viewed as the most critical intangible resources for the firm. Therefore, the ability of firms to generate and exploit new forms of knowledge is vitally important (Anand, 2007). The relevance of the theory to this study is that it considers cost of education, training, development and even workers' medical treatment as investments towards improved productivity of individual workers and also creates a sort of competitive advantage which ultimately results in improved organizations financial performance. Thus, if these are investments like other physical assets which are reflected on the statement of financial position, considerable effort must also be made to reflect such value of knowledge in human capital on the statement of financial position.

### **Intellectual Capital Reporting**

The Intellectual Capital (IC) report is a historic document which gives an account of numerous "indices" from the financial, customer, process, renewal and development, and

human focuses. A body of literature pertaining to the reporting and disclosure of IC exists and this literature tends to differ based on whether the focus is on internal management or external shareholder issues (Kaufmann, 2004). Intellectual capital reporting can be deconstructed into an internal aspect, focused on internal managers, which seeks to extend the management accounting literature, or an external aspect involving financial accounting perspective. Both aspects of IC reporting have a direct influence on the primary independent variables for this research. The literature pertaining to external reporting and disclosure issues is much more pronounced. One of the major factors that may have contributed to the increase in the research agenda pertaining to the external reporting and disclosure of intellectual capital could be attributed to increased demand for intellectual capital information.

This increased demand for information may have contributed to the increase in both required and voluntary disclosure of intangibles and the changes in the accounting standards. Disclosure of information related to intangible assets and intellectual capital has gained importance in recent years. The main purpose of this report is to provide useful information for users about intellectual capital, including shareholders and investors, financial analysts, employees and other individuals. Reporting and disclosure of information on intellectual capital, has an important influence on the various stakeholders within the organization and those who stand outside the organization's decisions. In fact, disclosing this type of information may be affected in two ways. This information will influence the understanding of the market value by external users, and this understanding will be surely effective in management decisions. Because of the importance of intellectual capital for many companies, the disclosure and reporting of financial and non- financial information in the company is highly recommended by users. In the traditional accounting system, there are restrictions on the reporting and disclosure of intellectual capital, since most of the components of intellectual capital are not reflected in the balance sheet. Instead, the costs for intellectual capital are directly reflected as current expenses in income statement. Immediate recognition of these expenses as costs reduces current profits, and thus the financial status of enterprises shows to be distorted. In summary, it is now generally accepted that current traditional financial accounting based reports are insufficient means to inform the investment community and other stakeholders on a firm's overall performance and prospects. The Intangible Asset Monitor and the Balance Scorecard are only two examples of attempts to address the shortcomings in current internal accounting reports.

Researchers are now considering both complementary and alternative means for disclosing future value creation information to the marketplace. The challenges still remain from an accounting perspective, as the current reporting rules for intangibles are inadequate and lead to a gross understatement of their value (Lev, 2001). In addition, the continual lack of intellectual capital disclosure can be seen as facilitating insider trading through privileged access to information by some market actors (Holland 1999; Lev, 2001), while others continue to argue that what intellectual capital is supposed to disclose is somewhat problematic. Skandia's pioneering effort in 1994 to produce the first intellectual capital report has met with limited success. However, several European nations have developed guidelines for intellectual capital reporting (Bukh, 2001) and it is apparent that firms are beginning to launch projects, encouraged by governments to measure and report on

intellectual capital. Besides, the international integrated reporting council (IIRC, 2011) has advocated for a complete and full disclosure of the company's performance. It emphasizes that preparer of financial statements should think beyond the compliance framework and financial reporting to deeply examine all the ways in which to deliver sustainable value, and a highly practical way of providing adequate information to stakeholders of business.

Implementation of intellectual capital has gained attention as the latest development of financial reporting in 2011 by the International Integrated Reporting Council (IIRC) and supported by the Global Reporting Initiatives (GRI), the Integrated Reporting ("The World Has Changed-Reporting Must Too", 2011). Integrated Reporting provides a report that fully integrates financial and non-financial information of companies to explain the ability of an organization in the creation of value and maintain its value over the long term (IIRC, 2011). Therefore, it is imperative for companies to measure and report (disclose) their intellectual capital activities in their annual financial statements in order to enhance the true picture of their financial performance.

### **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 & Jordan (2008) opined that achieving good financial results is therefore a key objective of any economic entity.

### **Financial Performance Measurement Dimensions**

Performance measurement is the “heart and soul” of the performance-based management process. Generically, Performance measurement is considered information systems that are used to evaluate both individual and organizational performance. In recent years, firm performance measurement (FPM) has received considerable attention as a substantial academic subject for investigating in management science literature particularly in accounting. Researchers and academicians have used various dimensions for measuring firm performance. Until recently, most scholars concentrated on the use of financial tools for firm performance measurement and evaluation purposes. Evaluating firm performance using financial tool has been a traditional yet powerful tool for decision-makers, including business analysts, creditors, investors, and financial managers. Rather than employing the total amounts observed on financial statements, these analyses were conducted using a number of financial ratios to obtain meaningful results. Ratio analysis can help stakeholders to analyze the financial health of a company. Using these financial ratios, comparisons can be made across companies within an industry, between industries, or within a firm itself (Ofurum, Solomon & Micah). Such a tool can also be used to compare the relative performance of different size companies. However, management accounting researchers (Otley, 1999; Norreklit, 2000) have criticized relying solely on financial tools for firm performance measurement as it has serious inherited limitations with respect to the return on capital employed (ROCE). In an environment characterized by convenient ways of information delivery and rapid-changing markets, nevertheless, a company nowadays shall never solely rely on financial performance to achieve survival and competitiveness. It is impossible to sufficiently gauge the firm performance using financial ratios as the single indicator. Consequently, companies started to use key non-financial measures in their performance measurement systems to provide managers with the appropriate information about the overall company situation (Ittner & Larcker, 2001; Speckbacher et al., 2003).

In the modern literature, researchers have utilized both measures financial and non-financial, as the most important in the measurement of firm performance. A combination of financial and non-financial information is essential to give a more balanced overall performance of the organization (Hoque & James, 2000). However, Ross, Westerfield and Jordan (2008) maintained that since business results are quantified in monetary terms, financial criteria remain the only ideal base for performance measuring system. This study therefore used financial dimensional constructs for commercial banks financial Performance measurement with its sub-constructs as (Revenue Growth and Return on Investment).

### **Intellectual Capital and Financial Performance**

Business environment in recent time is highly driven by technology, knowledge, expertise and relation with various stakeholders. Sveiby (1997), Edvinsson (1997) and Lynn (1998) consider intellectual capital as a main source of value creation in the new economy. It is the

combination of these items that are referred to as intellectual capital or asset. Three basic components of intellectual capital have been identified by scholars and practitioners as Human capital, structural Capital and Relational Capital. For any firm to remain competitive and relevant in the current economy there must be good combination of these components of intellectual capital (IC). Intellectual capital is thus seen as the key value drivers in the modern economy wherein knowledge-based resources are crucial for firm performance and economic development of global nations. Studies have suggested that through the integration of human, structural and relational resources, intellectual capital helps an organization to create distinctive competencies through the judicious utilization of its available resources, thereby enhancing its performance and overall value in the economy. These components separately or jointly influence firm financial performance.

### **Structural Capital and Financial Performance**

Structural capital can be described as the intellectual value the firm accumulates as a result of products or systems the firm has created over time. It comprises the internal processes, patents, and policies, infrastructure (such as information technology and systems), and organizational culture and strategies that support its core competence (Edvinsson & Malone, 1997). It is the supportive infrastructure that enables the human capital to function, and hence includes the content part of the firm knowledge asset and the intellectual investment made in the physical, technical and organizational culture infrastructure that support its activities (Muhammad, Bharu, & Ismail, 2009). The impact of structural capital on economic performance of firms such as productivity or profitability has been extensively documented (Arthur, 1994; Kelly, 1994; Huselid, 1995; Delany & Huselid, 1996; Ichniowski, Shaw, & Prensushi, 1997).

### **Empirical Review**

Empirical studies that have investigated the relationship between intellectual capital and financial performance are immensely sparse, compared with those that seek to establish the reverse relationship. Chen, Lin & 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. Cahill, Sidhu & Kansal (2013) in Australia conducted a study and stated that the value creation capability of financial sector was highly influenced by human capital. About two thirds of the sample companies had very low levels of intellectual capital efficiency. The performance of various components of VAIC and overall VAIC were different across all subsectors in the financial sector. Investment companies showed high value VAIC due to higher level of human capital efficiencies whereas the insurance companies reported focus on physical capital rather than human and structural capital leading to lower VAIC. Chidiebere (2013) in Nigeria investigated the relationship between intellectual capital and financial performance. The results showed that HCE has a negative relationship with Growth in Revenue (GR) which

implies that increases in the values of HCE will result in a decrease in the values of Growth in Revenue (GR) of banks studied.

Other empirical studies include: Nazar & Herremos (2007), Gialiani & Branstran (2011).

Table 1 presents a webometric with a cocktail of evidence about the connection between financial performance and intellectual capital reporting. Even though the results are mixed, the study target structural capital and revenue growth could be influenced by financial performance. This re-echoes the dominant role performance could play in any sector.

**Table 1: Webometric Analysis of Intellectual Capital Reporting**

“S/N	Author’s/Year	Title of Research	Journal, Vol & Page’s’
001	Ambrosine & Bowman, C. (2001)	Tacit knowledge: some suggestions for operationalisation	Journal of management sciences. 38(6),811-829
002	Zouty, I. (2000)	Interpersonal and interaction influences on informal resources exchanges between RED researchers across organizational boundaries	Academy of management Journal. 43(1), 50-51
003	Chillemi, O. & Gui, B. (2001)	Team human capital and worker mobility	Journal of Labour Economics. 15(4),567-585
004	Rastosi, P.N (2002)	Knowledge management and intellectual capital as a paradigm of value creation.	Human systems management 21(3),229-240
005	Robinson .J. &; Schmid, A.A., & Siles, M.E (2002)	Is social capital really capital?	Review of social economy Lx(1),1-21.
006	Skailch, Y. M (2004	Measuring and reporting of intellectual capital performance analysis.	The journal of American Academy of Business. 4(4), 439-448
007	Tallman, S., Jenkins, M., Henry, N & Pinch, S. (2004)	knowledge, cluster, and competitive advantages	Academy of management review 29(2),258-271
008	Teachman, J.D., Paasch, K. & Carver, K. (1997)	Social capital and the generation human capital.	Social forces 75(4), 1343-1359
009	Canibano, A., Garcia – Ayaso, M. & Sanchez, P. (2000)	Accounting for intangibles: A literature review.	Journal of Accounting Literature. 19(2),102-130
010	Cameron, J.C., Gelbach, J.B & Miller, D.L (2011)	Robust inference with <b>multiway</b> clustering.	Journal of Business & Economic statistics. 29(2),238-249
011	Chen, M.C. Cheng. S. L. & Hwarg, Y. (2005	An empirical investigation of the relationship between, intellectual capital and firms’ market value and financial performance.	Journal of intellectual capital 6(2),159-176.
012	Chu, S.K., Chan, K.H., <b>Yu-K.Y., Yu, K.Y., N.G. H.T.</b> (2011)	An empirical study of the impact of intellectual capital on business performance.	Journal of information and knowledge management 10(1),11-21



013	Firer, S. & Stainbank, L. (2003)	Testing the relationship between intellectual capital and a company's performance: Evidence from south Africa	<b>Meditori</b> Accounting Research,11(1),25-44
014	Eckstein, C. (2004)	The measurement and recognition of intangible assets. Then and now	Accounting form 28(2),139-158.
015	Flamholsz, E. (2005)	Conceptualising and measuring the economic value of human capital of the third kind: Cooperate culture.	The journal of Human Research Costing and Accounting. 9(2),39-93.
016	Firer, S. & Williams, S. M. (2003)	Intellectual capital and traditional measures of corporate performance.	Journal of Intellectual Capital 4(3),348-360
017	Giuliani, N. & Branrstrain, S. (2016)	defining goodwill: A practice perspective	Journal of Financial Reporting and Accounting 9(2),161-175
018	Muhammad, N. M.N. & Ismail, M.K. A (2009)	Intellectual capital efficiency and firms' performance: Study on Malaysian financial sector.	International Journal of Economics and Finance. 1(2),206-212.
019	Nazari. J.A., & Herreman, I.M. (2007)	Extended VAK model: Measuring intellectual capital components.	Journal of intellectual capital 8(4),595-609
020	Williams, S.M. (2001)	Is intellectual capital performance and disclosure practices related?	Journal of intellectual capital. 2(3),192-203
021	Tseng, C. Y., James, GN, Y.L. (2005)	Intellectual capital and corporate value in an emerging economy. Empirical study of Taiwanese manufacturers.	R&D Management, 32(2),187-201
022	Wall, A. (2005)	The measurement and management of intellectual capital in the public sector. Taking the lead or waiting for direction?	The international journal of Human Resource Management 20(3),562-577
023	Ruta, C.D. (2009)	<b>HR partial</b> alignment for the creation and development of intellectual capital.	African Journal of Business Management 5(1),88-95.
024	Ahangar, R.G (2011)	the relationship between intellectual capitals and financial performance: An empirical investigation in an Iranian company.	International Journal of Science and Research (IJSR) 2(4),108-116.
025	Alghifari, S. Triharjono, S. & Juhaeni, Y. (2013)	Effect of ROA against Tobin's q: Studios in food and beverage company in Indonesia stock Exchange Years 2007-2011	International journal of financial research, 3(2),10-23.

026	Beaker, G.S. (1996)	Investment in Human capital. A study of selected companies in Nigeria.	A theoretical analysis. Journal of political economy, 5(6),9-49
027	Becker, G.S. (1996).	Investment in Human capital.	
028	Bell, B. & Kozlowski, S. (2008)	Active learning: Effects of core training design elements on self-regulatory <b>procedures</b> learning, and Adoptability.	The Journal of Applied Psychology, 93(2),296-131.
029	Seiby, K.E. (2007)	Methods for measuring intangible assts.	Journal of intellectual capital 3(1),125-167
030	Syeiby, K.E (1997)	The intangible assets <b>monitor</b> .	Journal of Human resource costing & accounting 2(1),34-40
031	Saudah, S., Mike, T. & Richard, P. (2005)	The implications of intellectual capital on performance measurement and corporate performance.	Journal of intellectual capital 4(1),225-267
032	Sangaolu, W.A., Onifade, H.O. & Ajulo, O.B. (2017)	Determinants of dividend policy in Nigerian manufacturing firms.	Research Journal of finance and accounting. 8(6),12-15.
033	Saint – Onge, H. (1999).	Tacit knowledge: the key to the strategic alignment of intellectual capital.	Strategic leadership journal, 24(2),10-14.
034	Ruta, C.D. (2009)	HR Portal alignment for the creation and development of intellectual capital	International Journal of Human Resource Management. 20(3), 562-577
035	Rastogi, I. (2003)	Measuring your company’s intellectual performance.	Long Range Planning 30(3),413-426.
036	Ranjith, B.A.	The impact of intellectual on investors capital gain on shares: An empirical investigation in Tai Banking and Insurance sector.	Journal of Internet Banking. 22(4),47-63.
037	Palic, A. (2004)	Intellectual capital – Does it create or destroy value? Measuring Business Excellence.	Journal of intellectual management 8(1),62-68.
038	Pulic, A. Zomemann (1999)	The physical and intellectual capital of Austrian Bank	International journal of technology management 20(4),501-716
040	Bontir, N (1990)		
041	Yang, C.C. & Lin, C.Y.Y. (2009)	Does intellectual capital mediate the relationship between HRM and organizational performance? Perspective of health care industry in Taiwan.	International Journal of Human Resource Management. 20(9), 1965-1984

042	Wright, P.M., Dunford, B.B. & Snell, S.A. (2001)	Human resources and the resource based view of the firm.	Journal of Management. 27(6),701-721.
043	Wright, P.M. & McMahan, G.C. (2011)	Exploring human capital putting back into strategic human resources management.	Human Resource Management Journal, 21(2),93-104
044	Williams, M. (2001)	Is intellectual capital performance and disclosure practice related.	Journal of intellectual capital. 2(3),192-205.
045	Wernerfalt, B. (1984)	A resource – based view of the firm.	Strategic Management Journal, 5(2),171-180
046	Wallace, R.S.O (1988)	Corporate financial reporting in Nigeria.	Accounting and Business Research 13(72), 352-362.
047	Ulum, I., Ghozali, I., & Purwanto, A. (2014)	Intellectual capital performance of Indonesian banking sector. A modified VAIC (M – VAIC) perspective.	Asian Journal of Finance and Accounting. 6(6),103-123.
048	Temple, M., Ofurum, C.O & Solomon, is (2016)	Audit committee characteristics and quality of financial reporting in quoted Nigerian banks.	International Journal of Advanced Research/Social & Management Science 2(1),32-43.
049	Sudibya, D.C. N.A. & Restnti, M.M. D (2014)	Pengaruh modal. Intellectual terhadap Nilai Perasah degon Kcaangan.sebagai interening	Seminar Nasional dan.journal of management 3(1),37-43
050	Pulic, A. (1998)	Measuring the performance of intellectual potential in knowledge economy.	International Journal of Technology Management 20(2), 245-354.
051	Petty, R. & Guthrie, J. (2000)	Intellectual capital literature review: measurement, reporting and management.	Journal of intellectual capital. 1(2), 151-176.
052	Pattpm. J.R. (2009)	Metrics for knowledge – based project organizations.	Academic Management Journal. 72(1),33-43
053	Ofoegbu, G. & Okoye, E. (2006)	The relevance of accounting of auditing standards in corporate financial reporting in Nigeria: Emphasis on compliance.	The Nigerian Accountant 39(4),45-53
054	Nazari, A. & Herremans, I.N (2007)	Extended VALC Model: Measuring intellectual capital components.	Journal of Intellectual Capital 8(4),595-609.
055	Mouritsen, J. (1998)	Driving Growth: Economic value added versus. Intellectual capital.	Journal of management accounting research, 12(5),123-152.
056	Ming, C.C., Shu, J.C. & Yuhachang, H. (2005)	An empirical investigation of relationship between intellectual capital and firms market value and financial performance.	Journal of Intellectual capital, 6(2),159-570.

057	Micah, L.C., Ofurum, C.O & Ihendinihu, J.U. (2012)	Firms financial performance and human resources accounting disclosure in Nigeria.	International Journal of Business and Management, 7(14),67-75.
058	Makki, M. & Lodhi, S.A. (2009)	Impact of Intellectual capital on Return on Investment in Pakistani Corporate sector.	Australian Journal of Basic applied sciences. 3(3),2959-2967.
075	Kim, D. Kumar, V. & Kumar, U (2009)	A framework of intellectual capital management based on - ----- quality management system.	Journal of knowledge and process. Management. 16(6), 162-173.
076	Kamath, G.B (2010)	The intellectual capital performance of banking sector in Pakistan.	Pakistan Journal Communications and Social Sciences, 4(1),84-99.
077	Goh, P.C. (2006)	Intellectual capital performance of commercial banks in Malaysia.	Journal of intellectual capital. 6(3),385-396
080	Flavio, I.R (2007)	Intellectual capital and the creation of values in the Brazilian companies	Journal of Intellectual Capital. 8(1),73-102.
082	Fireer, S. & William, S.M. (2004)	Intellectual capital on traditional measures of corporate finance.	Journal of Intellectual Capital. 4(3),348-360.
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084	Edvinsson, L. (1997).	Developing intellectual capital in Scandia. Long range planning.	Journal of Intellectual Capital. 30(3),320-331.
085	Clarke, M., Seng, D. & Rosalived, H. W.	Intellectual capital and firm performance in Australia.	Journal of Intellectual Capital. 12(1),505-530
085	Chen, M.C., Chang, S.J. & Hwang, Y.(2005)	An empirical investigation of the relationship between intellectual capital and firm's market value and financial performance.	Journal of Intellectual Capital. 6(2),159-176.
086	Campisi, D. & Costa, R. (2008).	A DEA-Based method to enhance intellectual capital management.	Journal Knowledge and Process Management. 15(3),170-183
087	Brumment, R.L., Flemholtz, E.G. & Pyle, W.C. (1968).	human resources management: A challenge for accountants.	The Accounting Review, 2(3),217-224.
087	Brenna, M. (1999)	Empirical analysis of the intellectual potential of value systems in Australia according to the VAIC.	Journal of Intellectual Capital. 3(2),16-43.
088	American Accounting Association Committee. (1993)	Report on human resource accounting.	The Accounting Review, 4(2),48-70

089	Becker, G.S. (1996)	Investment in human capital. A theoretical analysis.	Journal of Political Economy, 3(6),9-48.
090	Bontis, N. (1998)	Intellectual capital: An exploratory study that develops measure and models.	Management Decision, 36(2),63-76.
091	Bovneman, M. (1999)	Empirical analysis of the intellectual potential of vale systems in Australia according to the VAIC..	Journal of Intellectual Capital, 3(5),16-48
092	Brenna, N. & Connell, C.(2011)	Intellectual capital: current and policy implications.	Journal of Intellectual Capital, 1(3),156-187.

### Research Hypotheses

The major hypotheses of this study is a derivative of the foregoing discourse, leading us to predict a priori a negative relationship between intellectual capital reporting and measures of financial performance.

- H<sub>01</sub>: There is no significant relationship between structural capital and revenue growth of quoted communal banks in Nigeria.
- H<sub>02</sub>: There is no significant relationship between structural capital and return on investment of quoted communal banks in Nigeria.

### Research Methods

Our empirical research study focused on the intellectual capital reporting and, more specifically, on the measures of financial performance. The research design applied is “causal – comparative” design which attempts to identify the cause-effect relationship between two or more variables. The study is to evaluate the effect of overall taxes to total revenue an economic growth and to determine the causal relationship of the variables.

The population of this study consists of 15 quoted commercial banks which shares are actively traded in Nigeria Stock Exchange (NSE) as at December 31, 2015 business year; beside the quoted commercial banks, a working population i & ii. Time series data was sourced from published financial statement or the annual reports and accounts particularly the statement of profit or loss and comprehensive income and statement of financial position as well as their respective notes to the accounts directly from banks’ website and NSE.

We utilized the Pearson product moment correlation coefficient and ordinary least square of simple linear regression model as the underlying statistical tools to test the influence of each of the predictor and criteria variables. The simple linear regression model was used based on its ability to show meaningful relationship between two variables. Thus the hypotheses were tested using the specified model via model specification, while unit root test and granger casualty test were analyzed in the following order through econometric procedure, unit root test, granger causality test and simple linear regression model with the aid of SPSS version 23.

### Regression Model

The econometric model specification is based on the theory that intellectual capital reporting relates with financial performance (Shia, 2006; Stewart, 2006; Mavrids, 2008; Ahuja & Ahuja, 2012). Specifically, the Model from related empirical evidences used by Ulumi., Chozali & Parwant (2014) was adopted but we made modifications. We generated three

models to achieve the first two objectives and answer the corresponding research questions. Consequently, the model specifications were formulated in the following functional forms.

$$\begin{aligned} RG_{it} &= f(S C_{it}) \\ ROI_{it} &= f(S C_{it}) \end{aligned}$$

Where the operational definitions are:

$$\begin{aligned} RG_{it} &= \text{Revenue Growth for the period of time} \\ ROI_{it} &= \text{Return on Investment for the period of time} \\ SC_{it} &= \text{Structural Capital for the period of time.} \end{aligned}$$

Expanding the functional form into mathematical form, we arrived at the following equations.

$$\begin{aligned} RG_{it} &= \alpha_0 + \beta_1 SC_{it} \\ ROI_{it} &= \alpha_0 + \beta_1 SC_{it} \end{aligned}$$

As observed, functional forms and mathematical forms do not have a random or stochastic variable and since in statistical relationship we deal with random or stochastic variables, that is variables that have probability distributions, the above functional equations are stated in equation that describes how the dependent variables are related to all the independent variables and an stochastic error term or stochastic disturbance term stated as a multiple regression model as follows:

$$\begin{aligned} RG_{it} &= \alpha_0 + \beta_1 SC_{it} + \mu_{it} \\ ROI_{it} &= \alpha_0 + \beta_1 SC_{it} + \mu_{it} \end{aligned}$$

Where:  $\alpha_0$  = Intercept term (parameter).  $\beta_1$  are parameters known as partial regression coefficients or partial slope coefficients (Goh, 2005; Shia, 2008).  $\mu_{it}$  = Represents the random or stochastic disturbance term. Where  $_{it}$  denotes the value of the variable at time.

### **Analysis of Econometric Results and Discussion.**

We now analysis and discuss the central findings of our investigation. The descriptive statistics in table two highlight the basic features of the data analyzed in the study. The table shows wide dispersions between intellectual capital reporting and measure of financial performance of quoted oil and gas companies in Nigeria.

### **Data Analysis**

#### **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
SCEI	.004	.961	.72941	.156870
RG	2.220	99.910	29.68067	28.456357
ROI	.250	41.940	3.38933	5.975227

The table 1 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.		
SCEI	5%	2 <sup>nd</sup>	-3.525618	-2.902953	0.0309
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.

### 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.
SCEI does not Granger Cause HCEI	73	0.1108	0.8953
HCEI does not Granger Cause SCEI		2.13588	0.126
SCEI does not Granger Cause RCEI	73	3.16917	0.0483
RCEI does not Granger Cause SCEI		4.40465	0.0159
ROI does not Granger Cause RG	73	0.0642	0.9379
RG does not Granger Cause ROI		0.29721	0.7439
SCEI does not Granger Cause RG	73	0.71722	0.4918
RG does not Granger Cause SCEI		0.53985	0.5853
SCEI does not Granger Cause ROI	73	0.09767	0.9071
ROI does not Granger Cause SCEI		0.29807	0.7432

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	SCEI	RCEI	RG	ROI
SCEI Pearson Correlation	1.000**	1.000	-.027	-.049	.152*
Sig. (2-tailed)	.000	.	.818	.949	.030
RG Pearson Correlation	.166	-.049	.144	1.000	.229*
Sig. (2-tailed)	.957	.949	.490	.	.048
ROI Pearson Correlation	.273*	.152*	-.026	.229	1.000
Sig.(2-tailed)	.030	.030	.215	.048	.

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 4 which is a summary of the model estimate extracted from the SPSS statistic 23.0 outputs.

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

$$FP = \alpha_0 + \beta_2 SCEI + \epsilon$$

HO	R	R <sup>2</sup>	$\beta$	F	T	Sig
HO <sub>2</sub>	0.049	0.002	0.049	0.173	2.283	0.679
HO <sub>5</sub>	0.152	0.023	0.152	1.717	1.310	0.194

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.

### **Hypotheses Testing**

The formulated hypotheses were statistically tested as shown in their null form. The rejection or acceptance of the hypotheses is guided by the decision criteria and rule below:

#### **Decision Criteria.**

The following general guidelines were used to decide on whether to accept or reject the null hypotheses:

- If p value  $> .05 \rightarrow$  “not significant”
- If p value  $\leq .05 \rightarrow$  “significant”
- If p value  $\leq .01 \rightarrow$  “highly significant.”

#### **Decision Rule.**

If the  $P$ -value is less than (or equal to) Alpha ( $\alpha = 0.05$ ), then the relationship is significant and thus, the null hypothesis is rejected. But if the  $P$ -value is greater than Alpha ( $\alpha$ ), then the relationship is not significant and thus, the null hypothesis is accepted.

#### **H<sub>0</sub><sub>2</sub>: Structural capital has no significant influence on the revenue growth of quoted commercial banks in Nigeria.**

Utilizing the earlier result, Structural Capital Efficiency Index with  $R = 0.049$  and  $R^2 = 0.002$  feebly explained the variability in revenue growth. This means that changes associated with the response variable (revenue growth) are captured by only 0.2% in the explanatory variable (Structural capital). The ANNOVA results displayed the inability of the explanatory variable (Structural Capital Efficiency) to statistically predict the revenue growth as F-ratio value ( $F=.173$ ) is less than 1. Moreso, the results also demonstrates that Structural Capital Efficiency Index is negatively correlated with revenue growth as indicated by  $\beta = -.049$ ,  $T = -.416$  and  $P\text{-value} = .679$ . This could be as a result of the value of structural capital items not been reported in the financial statements. Given that the  $P\text{-value} = .679$  is more than alpha (0.05), we accepted the null hypothesis and conclude that Structural Capital has no significant influence on the revenue growth of commercial banks in Nigeria.

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

On the basis of the earlier results of this study, Structural Capital Efficiency Index with  $R = .152$  and  $R^2 = .023$  explained 2.3% changes in the return on investment. Besides, the Structural Capital Efficiency Index with F-ratio value ( $F=1.717$ ) positively predicted return on investment of quoted commercial banks in Nigeria. The results from the coefficients model above shows that structural capital Efficiency Index is positively correlation with the return on investment (ROI) with  $\beta = .152$ ,  $t = 1.310$ . This means that structural capital impacts positively on the return on investment of the quoted commercial banks in Nigeria. However, with the P-value = .194 which was more than Alpha 0.05, it is not statistically significant. Thus, the null hypothesis is therefore accepted and concludes that Structural Capital has no significant link with the return on investment of commercial banks in Nigeria.

**Summary, Conclusion and Recommendations**

The present study adopted regression analysis model and Spearman Correlation for the main reason of explaining statistically the contribution of intellectual capital to financial performance of quoted banks in Nigeria. The study formulated six different hypotheses to guide the study.

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 6: Summary of Results**

H0:	Model	$\beta$	T	P	Relationship	Decision
H0:2	$RG = \alpha_0 + \beta_2 SCE + \epsilon$	-0.049	-0.416	0.679	Negative and not significant	Accept
H0:5	$ROI = \alpha_0 + \beta_5 SCE + \epsilon$	0.152	1.310	0.194	Positive but not significant	Accept

**Conclusion**

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:

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

Structural capital has no significant relationship with the return on investment of quoted commercial banks in Nigeria during the period covered by this study.

**Recommendations**

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

- i. 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.

- ii. Preparers of financial statements which normally use conventional accounting should appropriately recognize and treat intellectual capital as investment capital in order to ascertain the actual profit and the true financial performance of the company.
- iii. Intellectual capital components should be included in the annual reports of firms. This would enable workers, investors, management and other users of accounting information to appreciate the essence of Intellectual Capital Accounting.
- iv. International Accounting Standards Board (IASB) should incorporate Intellectual Capital in standards for proper recognition and treatment.
- vii. Continuous training and development programmes that will engender cohesive synergy among the components of intellectual capital for efficient financial performance should be encouraged.
- viii. Special reward(s) for outstanding employees should be instituted for the purpose of promoting further excellence performance in the workplace.

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