

Intellectual Capital Measurement: Using the Earnings Per Share Model of Quoted Insurance Companies in Nigeria

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Abstract

The earnings per share of insurance companies may be influenced by the intellectual capital capabilities of such firms. Intellectual capital is the aggregate of the workers' efforts towards the growth of an enterprise. The purpose of this study is to evaluate the extent to which these efforts may affect the earnings per share model of quoted insurance firms in Nigeria. Ex-post facto research design was used for the secondary data selection. Using the purposive sampling technique, 150 workers were used as the target population selected from the human resources, accounts and marketing departments of 18 active insurance companies. 150 questionnaires were distributed to the respondents with a response rate of 74%. To validate the measuring instruments, face validity, content validity and pilot tests were employed. The result from the primary data revealed that the effect of human capital was negatively insignificant on EPS ($P > 0.05$). The result from the secondary data showed that structural capital had insignificant negative effect on EPS ($P > 0.05$).

The study concluded that human capital (HC), structural capital (SC) and relational capital (RC) each had a statistical insignificant relationship with earnings per share (EPS) of insurance companies in Nigeria. The study recommended that a standard on intellectual capital accounting be issued by the International Financial Reporting Committee (IFRC) to enable firms measure and record their intellectual capital values as they relate to earnings per share in their income statements.

Key words: Intellectual capital; Financial performance; Insurance firms; Earnings per share; Value added intellectual capital

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INTRODUCTION

Intellectual capital are human efforts in the form of intangible assets which can be measured and through which organizations can gain competitive advantage. The insurance sector provides a unique case study where reliable recognition and measurement of such assets may be possible. The inability of firms to measure and quantify intellectual capital has posed fundamental problems overtime in the value measurement of firms.

Earnings Per Share (EPS), on the other hand is the proportion of the financial benefits measured in monetary terms which is attributable to one unit of the naira invested in the business by a shareholder. A change in the intellectual capital of a firm would invariably affect its earnings per share. Where a higher profit is earned, an increase in earnings per share would be recorded. Earnings per share may not usually equal dividend per share.

1. REVIEW OF RELEVANT LITERATURE

1.1 Conceptual Framework of Intellectual Capital

Intellectual capital is a major contributor to a firm's earnings. The shift from the industrial era in which plant and equipment were the core assets to the post-industrial, in which intellectual capital is the core asset confirms the flow of the current world economy (Flamholtz, 1999). While most firms in the industrial era by definition relied on manufacturing capabilities, companies in the post-industrial era now rely almost completely on knowledge and information for profitability. A company

will gain a competitive advantage if intellectual capital is effectively harnessed and measured in the organisation (de Pablos, 2003; Bontis, 2004). The drivers of this advantage (Pulic, 2004) may be found in all employees as well as the organization's ability to create value under a market assessment.

The study and measurement of intellectual capital on the profitability of insurance firms using the earnings per share window is a key challenge to managers towards the fulfilment of their stewardship obligation to investors. They rely on such financial information for the evaluation of the performance of their investments for both current and future periods. The intellectual resource asset is measured in terms of the skills and knowledge of workers. Intellectual capital should therefore be considered when valuing a company by capitalising instead of expensing them in the current period. According to Lev, Canibano and Mar (2005), there has been a shift from the industrial economy, in which tangible resources were dominant, to a knowledge economy, in which intellectual capital is a critical resource and a key determinant of competitive advantage, economic success and value creation in firms.

Human resource costs should therefore be reflected in the Statement of Financial Position rather than in the Income Statement as ordinary expenses. Intellectual capital can be evaluated under three main components, namely:

Human Capital is the value of all the workers in the organization with all the attendant rewards attached to their utilization (Verguwen & Alem, 2005). These capabilities are peculiar to the workers because they go away with them whenever they leave the organization (Roos & Roos, 1997).

Human capital is the generic term for the competences, skills, trainings and motivation of the employees. The human capital of the organisation comprises of all the qualities and professional skills the worker brings into the organisation. HC is owned by the worker and leaves along with him whenever he leaves the organisation. Human capital (Namvar, Fathian, Gholamin, & Akhavan, 2011) is at the heart of intellectual capital measurement.

Structural capital is the supportive infrastructure that enables human capital to function in an organisation. Structural capital is owned by an organization and remains with it even when the worker leaves the organization. Structural capital consists of trademarks, patents, formulas, management style, company reputation, image, corporate culture, networking, mission, vision. It is the difference between non-thinking and thinking resources that use very different management methods such as culture, organizational processes, technology, absorptive capacity and information systems to achieve corporate goals (Namvar, Fathian, Gholamin, & Akhavan, 2011). This form of capital is of strategic importance in the corporate planning and growth of any organization. Corporate culture, which is enhanced by structural capital,

comprises of all values and norms, knowledge transfer and the working manner which is peculiar to every business organisation. It also includes compliance to rules and the ability of the workers to handle failures corporately when they eventually occur. Structural capital is calculated as the difference between value added and human capital.

Relational capital is the inclination and preference the customers have over the goods and services of an organisation. Relational capital is the relationship which an organisation has with external groups and persons over time such as trade relationships with past, present and potential customers, suppliers, partners and the public at large. To maintain a high degree of relational capital, the organisation must exhibit a high sense of salesmanship and marketability with its sales team and open access to customers (Soumet, 2007).

1.2 Conceptual Framework of Earnings Per Share (EPS)

This is the proportion of the earnings which is attributable to one unit of the naira invested in the business by a shareholder. It is calculated as total profit after tax divided by the number of ordinary shares. Though this ratio does not reflect how much dividend is paid or how much is retained in the business (Pandey, 2010), it is yet a widely used investment analysis for the stakeholders. The preference of earnings per share over dividend per share is for the articulation of real earnings per share irrespective of whether dividend is paid out or not (Deberg & Murdock, 2014).

Where such earnings are not paid out as dividends, they are retained for future expansion and growth of the business for all stakeholders.

1.3 Theoretical Framework of Intellectual Capital

So many theories and models have been formulated by various scholars with respect to intellectual capital measurement and application. Present day scholars of intellectual capital accounting have used these theories as bases for their current study. Some of these are examined below:

a) The Balanced Score Card (BSC): The Balanced Score Card (BSC) is premised on the concept that a business strategy can be viewed as a set of hypotheses about cause-and-effect relationships. The BSC collects the results of human activity over time and expresses them as both internal and external measures. The BSC also monitors the progress in the building of capabilities and acquiring of intangible assets for future growth (Kaplan & Norton, 1996).

b) Skandia's IC Navigator: The same set of financial, operational, and customer concerns as recognized by the Balanced Scorecard is also taken into account by the Skandia IC Navigator though made more explicit through the need to consider the organization, its structure and processes for nurturing its employees. It incorporates

the presumption that intellectual capital represents the difference between market and book values of the firm, and that the total market value of a firm is equal to its financial capital plus its intellectual capital.

c) Economic Value Added (EVA) is defined as the difference between a company's net operating income after taxes and its cost of capital of both equity and debt (Chen & Dodd, 2001). It is based on the calculation of economic profit through value creation. Economic profit itself is measured as net profit after deducting the cost of capital utilized to generate such profits in the form of wages for the entrepreneur. EVA is calculated as: Net operating profit after tax - WACC x Book value of capital employed.

d) Market Value Added (MVA) is the difference between the market value of a company and the capital that creditors and shareholders have entrusted to it over the years in the form of loans, retained earnings and paid-up capital. MVA also derives its origin from the concept of economic profit. Thus, the market value added can be calculated as: *Number of ordinary shares outstanding multiplied by the share price plus the number of outstanding preference shares multiplied by the share price minus the book value of invested capital.*

e) Tobin's Q Ratio: James Tobin's Q ratio measures the result of human activity over time as expressed in the market value of a firm. The Q ratio can be regarded as the value of capital relative to its replacement cost. Stewart (1997) opined that where Q ratio is greater than 1, companies are likely to invest in similar assets that are worth more than their replacement cost but where Q ratio is less than 1, an asset is said to be worth less than the cost of replacing it.

f) Intellectual Capital Services' IC-Index: According to Brooking (1998), the IC-Index measures three indices used to aggregate the index into a single index which can be used to compare the same unit over time, or with other business units. The indices can be summarized into a critical review of existing indicators, development of indicators that represent the flows between different intellectual capital categories and the development of a hierarchy of intellectual capital indices.

g) The Technology Broker's IC Audit: According to Brooking, intellectual property assets include patents, copyrights, and trade secrets; human-centred assets include education and work-related knowledge and competencies; infrastructural assets include management processes, information technology systems, networking, and financial systems whilst market assets consist of brands, customers, distribution channels, and business collaborations.

h) Sveiby's Intangible Asset Monitor (IAM): Using the IAM, Sveiby (1997) asserts that the total market value of a firm consists of its visible equity and other three kinds of intangible assets categorized as either external structure or knowledge capital. The external structure consists of brands, customer and supplier relations whereas knowledge

capital comprises of internal structure and individual competence. Sveiby adopted the Nonaka and Takeuchi's four modes of knowledge conversion scheme to form part of the intellectual capital under-pinning of the IAM.

i) Real Option Theory (ROT) is the value of opportunities arising from intellectual capital which is based on non-financial assets where the underlying asset is non-tradable. Its value depends on the idea developed by the firm's R & D activity, the risk of the R & D activity, and the speed with which it is completed and introduced into the market in relation to similar actions of competitors in the same market (Johnson, Neave & Pazderka, 2001). This approach facilitates the interchange of stocks measured in net present value (NPV) with flows of future cash value.

(j) Citation-weighted Patents: A patent is a temporary legal monopoly granted to inventors for the commercial use of their inventions. They are correlated with the market value of the firm so as to show investors the value of the firm's stock of knowledge. The measurement of intellectual capital using patent citations is based on the assumptions that stock market investors hold the rational expectation that the present value of a firm's future profits varies with its stock of knowledge and that valuable technological knowledge within the firm tends to generate patents that future researchers will build on, for their future innovations.

(k) Value Added Intellectual Coefficient (VAICTM): According to Ante Pulic (Pulic, 1998, 2000, 2004) VAIC measures the value creation efficiency of firms by finding the coefficients of human, structural and capital employed as intellectual capital components of the firms. The VAIC method is based on the assumption that the creation of a company's added value is based on its use of physical capital as represented by the capital employed efficiency (CEE) and the intellectual capital as represented by human capital efficiency (HCE) and structural capital efficiency (SCE). Basically, the purpose of the VAIC calculation is to generate an added value on the one hand as well as determine the market value of the firm on the other. However, this study does not consider capital employed as a component of intellectual capital.

1.4 Empirical Framework

It is true that intellectual capital is acknowledged by the directors of companies, especially in the Chairman's Statement in the Annual Reports, yet such knowledge are not measured or articulated in the companies' financial reports. However, scholars have variously acknowledged its impact on a firm's financial performance. Contemporary works show that intellectual capital is an important component and a wealth-creating instrument that reflects organizational capacity (Yuan, 2001; Wang & Xu, 2002). In a study on the impact of investment in human resource training and development on employee effectiveness in Nigerian banks, Yahaya (2006) reiterates

that an often repeated statement made by directors and chairmen of corporate organisations in their annual reports is “our main asset is our workers”. Yet, this “main asset” is neither measured nor included in the financial report of the enterprise.

Since the measurement of intellectual capital is the process of evaluating human efforts in an analytical form, Flamholtz (1999) argues that neither financial nor managerial accounting has responded to current changes as evidenced in post-industrial economies. He realises that the accounting paradigm and related measurement technology have not been re-conceptualised to account for this economic transformation. In May, 1995, Skandia Corporation, the top insurance and finance enterprise in Sweden, issued the world’s first public Intellectual Capital Annual report. This marked a shift from the previous annual reports which were only compiled for reference purposes in companies’ reports. The result of this report was the formation of the Skandia Intellectual Capital Navigator, which not only measured intellectual capital, but also provided a framework for classification and a standard for the measurement of intellectual capital.

The Value Added Intellectual Coefficient, VAIC (Baldini, Liberatore & Ridi, 2011) approach is used to determine a firm’s efficiency in using intellectual capital resources. The sample analysis used by these scholars consisted of financial sector companies listed on the Italian Stock Exchange for the period 2006-2008. Their findings fully confirm the existence of a positive relationship between accounting values and market values on the one hand and Intellectual Capital (IC) components as measured by VAIC and market value on the other. VAIC, as measured by Ante Pulic (Pulic, 1998, 2000, 2004) has been criticised as an invalid measure of intellectual capital (Aho, Stahle & Stahle, 2011). Their argument is premised on the fact that VAIC indicates the efficiency of the company’s labour and capital investments and has nothing to do with intellectual capital.

According to Singh (2009) human resource costs can be categorized into Capital and Revenue Expenditure. He stated that Capital expenditure would include acquisition, development, retention, update, hiring, recruitment and training costs. Whereas Revenue expenditure would include wages, salaries, bonus, commission, perquisites, allowances, short-term motivation, efficiency and maintenance costs. Rowbottom (1998) in his thesis on intangible asset accounting and accounting policy selection in the football industry in the United Kingdom corroborates this view thus, that intellectual expenditure can be segregated into capital and revenue forms.

In the insurance industry, intellectual capital measurement has not been widely adopted. Moslehi, Mohaghar, Badie & Lucas (2006) in their investigation of the intellectual capital measurement and management in the Iranian insurance industry concluded that in spite

of the importance of intellectual capital measurement, the insurance industry in Iran largely ignores them. However, Iswati & Anshori (2007) found that intellectual capital, though new in Indonesia, has influence on the insurance companies’ performance in the Jakarta Stock Exchange.

Onafalajo, Eke & Akinlabi (2011) observe though that accounting in insurance companies, using the new IFRS recommendations is relevant to the Nigerian financial environment but argue that the application of IFRS through the use of observable and unobservable market inputs as well as the experience variance of operators may be difficult in the short run but achievable in the long run. In a study on organisational knowledge management as a strategy for Nigerian insurance companies, Epetimehin & Ekundayo (2011) observe that intellectual capital, a vital corporate asset, will melt away unless companies do something to stop the brain drain and to retain critical knowledge. This assertion was collaborated by Alaka, Tijani & Abass (2011) when they identified the impact of strategic planning on the performance of the Nigerian insurance industry.

Furthermore, Appuhami (2007) concludes from his empirical study of the impact of intellectual capital on Thailand’s financial sector that there is a significant positive relationship between investors’ capital gain on shares and corporate intellectual capital.

Ong, Yeoh & Teh (2011) investigate the intellectual capital efficiency in 43 food and beverage companies listed on the Malaysian Stock Exchange between 2008 and 2010. Using the VAIC (HCE, SCE, CEE), the outcome of their study revealed that the beverage companies have greater VAIC and intellectual capital efficiency (ICE) when compared to food companies over the 3 years period. In another study which evaluated the role of intellectual capital in the university efficiency system at Azad Islamic University in Iran; using synthetic model of genetic algorithm and decision trees, Modaresi, Rezaei & Javid (2012) observe that the development of intellectual capital affects university efficiency significantly. Tongo (2010) in his article on accounting for intellectual capital sets out to highlight the embedment of intellectual capital accounting within the confines of strategic management. He recommends that just as in traditional accounting where independent auditors are assigned to verify the accuracy of financial reports; independent strategic managers who are external to the firm should be employed to cross-check and perhaps correct whatever information that is being reported by the intellectual capital accountants, that is, strategic managers of individual companies. Asadi (2012) investigates the relationship between intellectual capital and value creation criteria of 59 companies listed in Tehran Stock Exchange for a period of five years. The results indicate that there are significant relationships between the independent variables of intellectual capital and dependent variables

of economic value added, cash value added, market value added, and refined economic value added. Rahman (2012) gives a guide on the assessment of the value added impact of intellectual capital components, which are primarily human and structural capital, on measures of productivity, profitability and market value of a firm by employing the Value Added Intellectual Coefficient (VAIC) technique. In a study of the effect of intellectual capital on organizational competitive advantage in Jordanian commercial banks in the Irbid district, Bataineh & Zoabi (2011) found that there were strong significant and positive influences between human and structural capital on competitive advantage, and moderate significant and positive influences with relational capital. These studies indicate that intellectual capital measurement and its effects on strategic business management are assuming a fundamental position in the contemporary business environment globally.

Henry (2013), in a qualitative investigation of intellectual capital in the engineering industry (with respect to SMEs) in the UK within the context of a recession, conducts ten interviews on the companies chosen. He concludes that there is a greater need to address the practical implications and barriers to the implementation of intellectual capital management through the Innovative Potential, Collaborative Potential and Operating Efficiency sectors in the industry. To understand how the measurement of intellectual capital can favour intellectual capital mobilization, (Chiucchi, 2013) examines the role of those who design and implement intellectual capital practices. Using the Kolb's experiential learning theory model, she opines that actors must complete an experiential learning cycle so as to enable them appreciate fully the contribution of intellectual capital in their organisations. The experiential learning theory model is an alternative way of understanding how intellectual capital measurement produces effects and how such effects can contribute to the mobilisation of intellectual capital in the industry. In addition, Corcoles (2013) analyses the importance of intellectual capital management as instruments to face the new challenges in European universities by providing assistance in the process of developing their ability to identify, measure and manage their intangible assets.

Demartini and Paoloni (2013) analyse the transition from measurement to management in relation to intellectual capital with particular reference to operational activities, strategies and context. The study highlights the process leading to the implementation of intellectual capital framework in the electronic and defence industries and concludes that such a framework will impact positively and create value in the organisation.

1.5 Empirical Framework of Performance

Financial performance in relation to intellectual capital connotes notable actions or achievements which

accrue to an enterprise as a result of intellectual capital measurement and application. This includes the effect of intellectual capital on earnings per share.

In an empirical study of intellectual capital performance and its impact on the financial performance of Pakistani insurance companies, Rehman, Ilyas & Rehman (2011) found that human capital efficiency (HCE) plays a significant role in IC performance of both life and non-life insurance sectors of Pakistan. They concluded that an insurance company with a high HCE and SCE invariably will have a better financial performance. Using a sample of 32 audited financial statements of quoted companies in Nigeria, Uadiale & Uwuigbe (2011) examine the impact of intellectual capital components on business performance. Salman & Mahamad (2012) review some of the available measurement tools that can be applied to evaluate the knowledge-based assets using management model and market model in the Malaysian economy. They found and agreed that the motive behind the development of intellectual capital measurement is to allow managers to evaluate their investments in intellectual capital assets as well as their contribution to the company's performance. Using the VAIC model, Javornik, Tekavcic & Marc (2012) studied more than 12,000 Slovenian companies between 1995 and 2008 and found a high degree of correspondence between the improvement in the rank of a company's IC investment efficiency and the improvement in rank of its financial performance in the peer group. Clarke, Seng & Whiting (2010) using Pulic's VAIC examine the effect of intellectual capital on firms' performance in Australian listed companies between 2004 and 2008. The results suggest that there is a direct relationship between IC and the performance of Australian publicly listed firms. Using the Sveiby's Intangible Assets Monitor, Cuganesan, Carlin & Finch (2007) examine the reporting of human capital performance in the Australian banking sector. Their findings suggest that there is diversity in human capital reporting levels; the co-existence of intellectual capital and corporate social responsibility and stakeholder concerns in reporting on human capital as well as variations in the value creation-focus of organisations when reporting their performance in managing intellectual capital. Using the Balanced Score Card (BSC) strategy, Bose & Keith (2007), examine the development of a framework for the measurement of an organisation's performance. Using 14 banks as sample size, Zou & Huan (2011) carried out a study on the impact of intellectual capital on the performance of listed banks in China. They opined that capital employed efficiency (CEE) and structural capital efficiency (SCE) have a negative correlation with the technical efficiency (TE) using the Data Envelopment Analysis (DEA), while human capital efficiency (HCE) has a positive correlation with TE. Kamath, (2007) found a positive relationship between

intellectual capital and performance. In a study of 98 Indian banks, the result of his study showed that foreign banks out-performed the local banks because they made the best use of their intellectual capital in their operations. Also, El-Bannany (2008) in his investigation of the determinants of intellectual capital performance in UK banks over the period 1999-2005, asserts that the standard variables of bank profitability and bank risk is important in the determination of banks' performance. The results also show that investment in information technology (IT) systems, bank efficiency, barriers to entry and efficiency of investment in intellectual capital variables, which have not been considered in previous studies, have a significant impact on intellectual capital performance. According to the result of a study conducted by Kujansivu (2006) on 20,000 Finnish companies between 2001 and 2003 using VAIC, companies in the electricity, gas and water supply sector were most efficient in utilising their intellectual capital. The study provides an empirical evidence of the implementation of intellectual capital management tools for the enhancement of performance in Finnish companies. The VAIC method used in the study was based on the premise that value creation is derived from physical and intellectual capital. Rafiei, Ghaffari & Parsapur (2012) investigate the role of intellectual capital in the improvement of the performance and social and technological economy of Iranian hospitals and concluded that there are some correlations between intellectual capital components and performance. In the empirical study of Mohammad & Ismail (2009) on the efficiency of intellectual capital (human capital, structural capital and capital employed) in the performance of 18 listed financial companies in Malaysia they assert that the banking sector relied more on intellectual capital followed by insurance companies and brokerage firms. The findings of the study are consistent with that of Goh (2005), who examines the intellectual capital performance of commercial banks in Malaysia for the period 2001 to 2003. Rehman, Rehman & Zahid (2011) examine intellectual capital and its impact on corporate performance in 12 modaraba companies in Pakistan using the VAIC components of human capital, capital employed and structural capital. The empirical result showed that one of the most important components of intellectual capital performance is Human Capital Efficiency which helps to boost financial performance of firms. However, in a study of the relationship between intellectual capital and innovation capital with financial performance and value of companies in the Tehran Stock Exchange (Besharati, Kamali, Mazhari & Mahdavi, 2012) found that there is no significant relationship between intellectual capital and corporate value. In a related study of the effect of performance on listed Jordanian insurance companies, Almajali, Alamro & El-Soub (2012) found out that leverage, liquidity, size and management competence indices have a positive statistical effect on the financial performance of those insurance companies and suggested

the need to have highly qualified employees in the top managerial staff. Confirming the positive relationship between intellectual capital and firm performance, Wang (2011) in his study of Taiwanese firms in 2001, using customer capital, human resource capital and structural capital as independent variables over return on asset, market price to book value and total productivity found that the relationship between structural capital and firm performance was insignificant. Abdulai, Kwon & Moon (2012) investigate factors instrumental to the success of software industries in India, Ireland and Israel in relation to the performance of software firms in West Africa. Focusing on the influence of top management commitment and transformational leadership on intellectual capital and its relationship with firms' performance, they proposed a second level model on the software industry. To validate this model, they conducted a field survey comprising 83 software firms in the West African region. The result of their investigation showed a significant relationship between the elements of intellectual capital and competitive capabilities of firms and between competitive capabilities and firm performance. Their study showed among other factors, that the intellectual capital of these nations is said to have contributed significantly to their success in the software industry. From their study, there is therefore a general consensus that management of intellectual capital constitutes the most important source of competitive advantage for organizations. In a study to explore the relationships between intellectual capital and business performance in Iraqi industries, Ahmad & Mushraf (2011) investigate whether intellectual capital has a direct effect on business performance. They affirm that intellectual capital is becoming the pre-eminent resource for creating economic wealth. Intellectual based assets have increased in terms of their importance and relevance in the financial performance of firms globally. Volkov & Garanina (2007) examine the importance of Intangible Assets in knowledge-based economy. They confirm the statement that the workforce is the main asset of a company and more so in knowledge-based companies. In their study of 43 Russian companies between 2001 to 2005 using econometric models, their surveys showed that the value of companies is now mostly generated by intangible assets. Brymer, Molloy & Gilbert (2014) highlight input, output and process contingencies as a pipeline hiring mechanism adopted by firms in the engagement of human capital in the modern economy.

2. METHODOLOGY

Ex-post facto research design was adopted in the selection of data modes. Primary and secondary data were employed. A targeted sample size of 150 workers was used. The target population consisted of 150 workers in the 3 strategic departments of human resources, accounts

and marketing of the 18 insurance companies using the purposive sampling technique. 150 questionnaires were distributed to respondents and a response rate of 74% was recorded. Face validity, content validity and pilot tests were used to validate the instruments. The Cronbach's Alpha reliability test gave a result of (r=0.806) and (r=0.800). Regression was used for data analyses at 5% levels of significance.

2.1 Research Model

$Y = f(X)$

Y = financial performance (EPS).

X = intellectual capital (HC, SC, RC)

$X = f(x_1, x_2, x_3)$

$EPS_{it} = a + \beta_1x_{1i} + \beta_2x_{2i} + \beta_3x_{3i} + \mu_{it}$

Where,

$\beta_1, \beta_2, \beta_3$ are slope coefficients multiplied by the growth in x_1, x_2, x_3 respectively.

a = constant (this is an intercept which is not affected by the changes in the predictor variables).

y = earnings per share

x_1 = human capital

x_2 = structural capital

x_3 = relational capital

x_1, x_2, x_3 are independent variables whose growth or decline will affect the dependent variables of EPS (y).

i = individual insurance firms

t = time (number of years)

From literature and hypothesis:

$y = f(x_1, x_2, x_3) \dots \dots \dots (i)$

2.2 Data Presentation, Analyses and Discussion of Findings

Test of Hypothesis: H_0 —There is no significant relationship between the intellectual capital of an insurance firm and its Earnings per Share (EPS). For the purpose of finding the relationship between intellectual capital and earnings per share, this hypothesis was tested.

The regression coefficient was given as:

$Y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \mu$

Where,

Y = Earnings per Share

a = constant

β_1 = coefficient of human capital

β_2 = coefficient of structural capital

β_3 = coefficient of relational capital

μ = error level incorporating omitted variables

**Table 1
Primary Data**

Variable	Coefficient	Std. Error	t-statistic	P value (Sig.)
Constant	22.773	1.194	19.069	.000
HC	.032	.032	.994	.323
SC	.006	.058	.109	.914
RC	-.033	.031	-1.062	.291
R	.133			
R ²	.018			
Adj. R ²	-.010			

To be continued

Continued

Variable	Coefficient	Std. Error	t-statistic	P value (Sig.)
F-stat.	.627			
P value (F-stat)	.599			

Significant at $\alpha = 0.05$

Note. Source: Researcher's regression output (2014)

The slope coefficients on Table 1 above show that the probability values were $P(x_1=0.323>0.05)$; $P(x_2=0.914>0.05)$ and $P(x_3=0.291>0.05)$ respectively. These results imply that human capital, structural capital and relational capital had statistically insignificant impact on the earnings per share of the insurance companies under review. This result contradicts the widely held view and the priori expectation that intellectual capital components are vehicles for increases in the financial performance of firms.

In view of the result displayed above, the probabilities connected with model x_1, x_2 and x_3 were higher than the specified level of significance, that is, $P(x_1=0.323>0.05)$; $P(x_2=0.914>0.05)$ and $P(x_3=0.291>0.05)$. Therefore the null hypothesis is accepted and the alternative hypothesis rejected. The aggregate effect of HC, SC and RC were insignificant at $(F=.599>.05)$. This result further confirms the acceptance of the null hypothesis. Furthermore, the slope coefficients of the B values of .032, .006 and -.033 respectively for human capital, structural capital and relational capital on Table 1 when substituted for the original equation models of α, β_1, β_2 and β_3 will be:

$Y = 22.773 + .032$ (human capital) $+ .006$ (structural capital) $- .033$ (relational capital).

The result from Table 1 does not support the generally held opinion of scholars of intellectual capital accounting (Pulic, 2004; Flamholtz, 1999; Asadi, 2012; Rahman, 2012; Henry, 2013; Uadiale & Uwugbe, 2011) who are of the view that intellectual capital components contribute positively to the financial growth of organisations. The above view is in consonance with a study carried out on the relationship between intellectual capital and financial performance on the value of companies in the Tehran Stock Exchange by Besharati, Kamali, Mazhari & Mahdavi in 2012.

Table 1 shows R Squared as the rate of change in the Earnings per Share which arose as a result of the insurance firms' ability to apply the three coefficients of human, structural and relational capital in their operations. The implication of the result is that a change in the firms' application of intellectual capital could only result into a 1.8% change on the earnings per share component of the insurance firms.

For the purpose of testing the secondary data, the regression coefficient was given as: $Y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \mu$

Where,

Y = Earnings per Share

a = constant

β_1 = coefficient of human capital

- β_2 = coefficient of structural capital
 β_3 = coefficient of relational capital
 μ = error level incorporating omitted variables

Table 2
Secondary Data

Variable	Coefficient	Std. Error	t-statistic	P value (Sig.)
Constant	.004	.297	.012	.990
HC	.007	.007	.905	.381
SC	.021	.036	.592	.563
RC	.011	.010	1.082	.298
R	.396			
R ²	.157			
Adj. R ²	-.024			
F-stat.	.866			
P value (F-stat)	.482			

Significant at $\alpha = 0.05$

Note. Source: Researcher's regression output (2014)

The slope coefficients on Table 2 above show that the probability values were $P(x_1=0.381>0.05)$; $P(x_2=0.563>0.05)$ and $P(x_3=0.298>0.05)$ respectively. These results imply that human capital, structural capital and relational capital had statistically insignificant impact on the earnings per share of the insurance companies. This result contradicted the widely held view as well as the priori expectation that intellectual capital components are vehicles for increases in the financial performance of firms. The secondary data result is also in agreement with the result obtained from the primary data.

In view of the result displayed above, the probabilities connected with model x_1 , x_2 and x_3 were higher than the specified 0.05% level of significance. Therefore the null hypothesis is accepted and the alternative hypothesis rejected. This hypothesis is also accepted when considered in view of the result obtained from the combined effect of the independent variables of HC, SC and RC on the dependent variable of EPS. The slope coefficients of the B values of .007, .021 and 0.011 respectively for human capital, structural capital and relational capital on Table 2 when substituted for the original equation models of α , β_1 , β_2 and β_3 were given as:

$Y = 0.004 + .007$ (human capital) $+ .021$ (structural capital) $+ 0.011$ (relational capital).

The result from Table 2 does not support the view of (Flamholtz, 1999; Pulic, 2004; Uadiale & Uwuigbe, 2011; Asadi, 2012; Rahman, 2012; Henry, 2013).

Table 2 further shows R Squared as the rate of change in the Earnings per Share which arose as a result of the insurance firms' ability to apply the three coefficients of human, structural and relational capital in their operations. This result implies that a change in the firms' application of intellectual capital resulted into a 15.7% change on the earnings per share component of the insurance firms.

SUMMARY OF FINDINGS, CONCLUSIONS

The result of both the primary and secondary data analysis showed that the effect of intellectual capital on earnings per share was not statistically significant. The same insignificant effect was obtained as the aggregate effect of the independent variables on EPS.

From the above results, it is fair to conclude that insurance companies in Nigeria do not measure and apply intellectual capital in their financial reports. Another reason for the insignificant effect of intellectual capital on financial performance was the lull in the capital market in Nigeria during the period covered by this study (Osae-Brown, 2011). From this study three important conclusions were deduced:

- (1) Insurance companies in Nigeria do not measure and apply their companies' intellectual capital.
- (2) Intellectual capital can be measured.
- (3) The financial performance of firms would positively improve if intellectual capital is recognised and recorded in the books of firms.

RECOMMENDATIONS

- (1) In view of the findings from this study, the following recommendations are made:
- (2) Expenditures on human capital should be capitalised. Human capital is made up of employee costs such as training and staff development.
- (3) 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.
- (4) Clear and proper records of relational capital should be kept by companies. If such records are kept, the calculation of intellectual capital would be easy. Intellectual capital accounting is an important component of the modern day business. Its essence should be incorporated into the day to day running of every business sector including the insurance industry.
- (5) 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.
- (6) An accounting standard for intellectual capital should be included in International Financial Reporting Standards (IFRS).
- (7) Training programmes that will upgrade workers value should be encouraged in the workplace.

REFERENCES

- Abdulai, M. S., Kwon, Y., & Moon, J. (2012). Intellectual capital & firm performance: An empirical study of software firms in West Africa. *The African Journal of Information Systems*, 4(1), 1-30.
- Ahmad, S., & Mushraf, A. M. (2011). The relationship between intellectual capital and business performance: An empirical study in Iraqi industries. *International Conference on Management & Artificial Intelligence*, 6, 104-109.
- Alaka, N. S., Tijani, A. A., & Abass, O. A. (2011). Impact of strategic planning on the performance of insurance companies in Nigeria. *European Journal of Humanities and Sciences*, 5(1).
- Almajali, A. Y., Alamro, S. A., & Al-Soub, Y. Z. (2012). A Comparison of financial performance in the banking sector: Some evidence from Omani commercial banks. *International Research Journal of Finance and Economics*, 3, 1-22.
- Almajali, A. Y., Alamro, S. A., and Al-Soub, Y. Z. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research*, 4(2), 266-289.
- Almajali, A. Y., Alamro., S. A. and Al-Soub, Y. Z. (2012). Ownership structure & financial performance: Evidence from panel data of South Korea. *Corporate Ownership & Control*, 6(2), 1-30.
- Appuhami, B. A. R. (2007). The impact of intellectual capital on investors' capital gains on shares: An empirical investigation of Thai Banking, Finance & Insurance Sector. *International Management Review*, 3(2), 14-25.
- Asadi, L. (2012). Investigating the effect of intellectual capital on the value creation of companies listed in Tehran Stock Exchange. *Science Road Publishing Corporation*, 2(1),12.
- Asadi, L. (2012). Measuring intellectual capital: a new model and empirical study. *Journal of Intellectual Capital*, 5(1), 195-212.
- Baldini, M. A., Liberator, G., & Ridi, T. (2011). Brand transaction announcements and stock price volatility. *Journal of Intellectual Capital*, 12(3), 2. Retrieved from www.emeraldpublishing.
- Bataineh, M., & Al Zoabi, M. (2011). The effect of intellectual capital on organisational competitive advantage: Jordanian commercial banks (Irbid District): An empirical study. *International Bulletin of Business Administration*, (10), 15-17. Retrieved from www.eurojournals. co
- Besharati, E., Mazhari, R. H., & Mahdavi, S. (2012). An investigation of relationship between intellectual capital and innovation capital with financial performance and value of companies accepted in Tehran Stock Exchange. *Journal of Basic and Applied Scientific Research*, 2(2), 1242-1245.
- Bontis, N. (2004). National intellectual capital index: A United Nations initiative for the Arab region. *Journal of Intellectual Capital*, 5(1), 13-39.
- Bose, S., & Thomas, K. (2007). Applying the balanced scorecard for better performance of intellectual capital. *Journal of Intellectual Capital*, 8(4), 653-665.
- Brooking, A. (1998). *Intellectual capital: Core asset for the third millennium enterprise*. London: International Thomson Business Press.
- Brymer, R. A., Molloy, J. C., & Gilbert, B. A. (2014). Human capital pipelines: Competitive implications of repeated inter-organisational hiring. *Journal of Management*, 40(2), 483-508.
- Chen, S., & Dodd, J. L. (2001). Operating income, residual income and EVA: Which metric is more value relevant? *Journal of Managerial Issues*, 13(1), 65-89.
- Chiucchi, M. S. (2013). Intellectual capital accounting in action: Enhancing learning through interventionist research. *Journal of Intellectual Capital*, 14(1), 48-68. doi: 10.1108/14691931311289011,
- Clark, M., Seng, D., & Whiting, R. H. (2010). *Intellectual capital and firm performance in Australia* (Working paper series no. 12). Department of Accountancy and Business Law.
- Corcoles, R. (2013). Intellectual capital management and reporting in European higher education institutions. *Intangible Capital*, 9(1).
- Cuganesan, S., Carlin, T., & Finch, N. (2007). The practice of human capital reporting among Australian financial institutions. *Journal of Finance and Accountancy*, 1(5).
- Deberg, C. L., & Murdock, B. (2014). An empirical investigation of the usefulness of earnings per share disclosures. *Journal of Accounting, Auditing and Finance*, 9(2), 249-260.
- Demartini, P., & Paoloni, P. (2013). Implementing an intellectual capital framework in practice. *Journal of Intellectual Capital*, 4(1), 69-83. doi: 10.1108/14691931311289020.
- dePablos, P. (2003). Intellectual capital reporting in Spain: A comparative view. *Journal of Intellectual Capital*, 4(1), 61-81.
- El-Bannany, M. (2008). A study of determinants of intellectual capital performance in banks: The UK case. *Journal of Intellectual Capital*, 9(3), 487-498.
- El-Bannany, M. (2008). The importance of intellectual capital and its effect on performance measurement systems. *Managerial Auditing Journal*, 17(1&2), 9-15.
- Epetimehin, F. M., & Ekundayo, O. (2011). Organisational knowledge management: Survival strategy for Nigeria insurance industry. *Journal of Management and Corporate Governance*, 3, 53-64. Retrieved from www.centresinpub.org
- Flamholtz, E. G. (1999). Current issues, recent advancements and future directions in human resource accounting. *Journal of Human Resource Costing & Accounting*, 4(1), 11-25.
- Goh, P. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital*, 6(3), 385-96.
- Henry, L. (2013). Intellectual capital in a recession: Evidence from UK SMEs. *Journal of Intellectual Capital*, 14(1), 84-101.
- Iswati, S., & Anshori, M. (2007). *Management accounting* (7thed.). Singapore: South-Western, Thompson Learning Inc.

- Iswati, S., & Anshori, M. (2007). *The influence of intellectual capital to financial performance at insurance companies in Jakarta Stock Exchange (JSE)*. Proceedings of the 13th Asia Pacific Management Conference, Melbourne, Australia.
- Javornik, S., Tekavcic, M., & Marc, M. (2012). An empirical investigation on the relationship between intellectual capital and firm's market value and financial performance. *Journal of Intellectual Capital*, 6(2), 159-176.
- Javornik, S., Tekavcic, M., & Marc, M. (2012). The efficiency of international capital investments as a potential leading indicator. *International Business & Economics Research Journal*, 11(55), 535-558.
- Johnson, L. D., Neave, E. H., & Pazderka, B. (2001). Knowledge, innovation and share value. *International Journal of Management Reviews*, 4(2), 101-134.
- Kamath, G. B. (2007). Intellectual capital performance of Indian banking sector. *Journal of Intellectual Capital*, 8(1), 96-123.
- Kaplan, R. S., & Norton, D. P. (1996). *The balanced scorecard: Translating strategy into action*. Boston, MA: Harvard Business Press.
- Kujansivu, P. (2006). Presentation at the 3rd conference on performance measurement and measurement control: Intellectual capital performance in Finnish companies. Finland.
- Lev, B., Canibano, L., & Marr, B. (2005). *An accounting perspective on intellectual capital*. Perspectives on Intellectual Capital. Boston, Elsevier Butterworth-Heinemann.
- Modaresi, S., Rezaei, F., & Javid, D. (2012). Application of genetic algorithm to explain the role of intellectual capital in the university efficiency. *Interdisciplinary Journal of Contemporary Research in Business*, 3(11), 11-24.
- Moslehi, A., Mohaghar, A., Badie, K., & Lucas, C. (2006). Introducing a toolbox for IC measurement in the Iran insurance industry. *The Electronic Journal of Knowledge Management*, 4(2), 169-180.
- Muhammad, N. M. N., & Ismail, M. K. A. (2009). Intellectual capital efficiency and firm's performance: Study on Malaysian financial sectors. *International Journal of Economics and Finance*, 1(2), 231-244.
- Namvar, M., Fathian, M., Gholamin, M. R., & Akhavan, P. (2011). Exploring the role of human capital on firm's structural capital in Iranian e-business industry. 3rd International Conference on Information and Financial Engineering. *IPEDR vol. 12*. Singapore: IACSIT Press.
- Onafalujo, A. K., Eke, P. O. & Akinlabi, B. H. (2011). Impact of international finance reporting standards on insurance management in Nigeria. *Middle Eastern Finance and Economics*, 12, 128-142.
- Ong, T. S., Yeoh, L. Y., & The, B. H. (2011). Intellectual capital efficiency in Malaysian food & beverage industry. *International Journal of Business and Behavioural Sciences*, 1(1), 16-31.
- Osaeb-Brown, A. (2011, March 5). Insurance: A beleaguered sector and its less than penny stocks. *Business Day*. Retrieved from <http://businessdayonline.com>
- Pandey, I. M. (2010). *Financial management* (10th edition). Retrieved from <http://www.flipkart.com/financial-management-10th/p/itmodytktxhkmh4dc>
- Pulic, A. (1998). *Measuring the performance of intellectual potential in knowledge economy*. Paper presented at the 2nd McMaster World Congress, Austria.
- Pulic, A. (2000). VAIC – An accounting tool for IC management. *International Journal of Technology Management*, 20(5), 702-714.
- Pulic, A. (2004). Intellectual capital—Does it create or destroy value? *Measuring Business Excellence*, 8(1), 62-68.
- Rafiei, M., Ghaffari, H., & Parsapur, R. (2012). Investigating the impact of intellectual capital on organizational performance: A case study in an Iranian medical science university. *African Journal of Business Management*, 6(9), 3546-3552.
- Rehman, S. (2012). How to explore the value added impact of intellectual capital components on the productivity, profitability and market value of a firm. *The International Research Journal of Science Management*, 1(7).
- Rehman, W., Ilyas, M., & Rehman, H. (2011). Intellectual capital performance and its impact on financial returns of companies: An empirical study from insurance sector of Pakistan. *African Journal of Business Management*, 5(20), 8041-8049.
- Rehman, W., Rehman, C. A., Rehman, H., & Zahid, A. (2011). IC performance and its impact on corporate performance: An empirical evidence from Modaraba sector of Pakistan. *Australian Journal of Business and Management Research*, 1(5), 8-16.
- Retrieved from www.researchgate.net/publication/
- Roos, G., & Roos, J. (1997). Measuring your company's intellectual performance. *Long Range Planning*, 30(3), 413-426.
- Rowbottom, N. (1998). *Intangible asset accounting and accounting policy selection in the football industry* (Doctoral dissertation). University of Birmingham, U. K.
- Salman, R. T., & Mahamad, T. B. (2012). Intellectual capital measurement tools. *International Journal on Social Science Economics & Arts*, 2(2), 19-25.
- Singh, M. (2009). Human resource accounting: Challenge for accountants. *International Research Journal*, 2(5), 440-442.
- Soumet, D. (2007, June). *Intellectual capital statement*. Technical paper on Zone Industrielle
- Stewart, T. A. (1997). *Intellectual capital: The new wealth of organisations*. University of Michigan, USA. Doubleday Press.
- Sveiby, K. E. (1997). *The new organizational wealth*. San Francisco: Berrett-Koehler.
- Tongo, C. I. (2010). Accounting for intellectual capital: A 21st century responsibility for strategic Managers. *Journal of Management Systems*, 22(1), 39-51.
- Uadiale, O. M., & Uwuiigbe, U. (2011). Intellectual capital and business performance: Evidence from Nigeria. *Interdisciplinary Journal of Research in Business*, 1(10), 49-56.

Van den Berg, H. A. (n. d). Models of intellectual capital valuation: A comparative evaluation.

Verguwen, P. G., & Alem, F. J. (2005). Annual report of IC disclosures in the Netherlands, France and Germany. *Journal of Intellectual Capital*, 6(1), 80-104.

Volkov, D., & Garanina, T. (2007). Intangible assets: Importance in the knowledge-based economy and the role in value creation of a company. *Electronic Journal Management*, 5(4), 539-550.

Wang, M. S. (2011). *Intellectual capital and firm performance*. Annual Conference on innovations in Business & Management, London, UK.

Wang, Y., & Xu, Q. R. (2002). Intellectual capital and its measurement. *Resources Development Management*, 14, 11-16.

Yahaya, K. A. (2006). Impact of investment in human resource training and development on employee effectiveness in Nigerian banks. *Journal of Social & Management Studies*, 12, 186-197.

Yuan, Q. H. (2001). *Corporate intellectual capital management*. Beijing: Economic and Management Publishing House.

Zou, X., & Huan, T. C. (2011). A study of the intellectual capital's impact on listed banks' performance in China. *African Journal of Business Management*, 5(12), 5001-5009.

APPENDIX

Key: 1=Strongly Disagree, 2=Disagree, 3=Fairly Disagree, 4=Fairly Agree, 5=Agree, 6=Strongly Agree

<u>Earnings per Share (EPS)</u>							
1	EPS as a measure of financial reward for capital investment is an important tool used by managers for the growth of the firm.						
2	As a measure of an investor's returns, higher Earnings Per Share achieved by managers is a motivating factor for more investments in a company.						
3	Financial managers' efforts bring about increase in the EPS of investors.						
4	EPS as a financial measuring instrument by workers can be used to determine the extent of a firm's profitability level.						
5	High return on equity as achieved by managers is highly desirable for continued sustainability in the business.						