

INTELLECTUAL CAPITAL EFFICIENCY AND EARNINGS QUALITY OF INSURANCE FIRMS IN NIGERIA

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This study empirically investigated the relationship between intellectual capital efficiency (ICE) and the earnings quality (EQ) of a sample of listed insurance firms in Nigeria. ICE, the predictor variable, was obtained by aggregating human capital efficiency (HCE), capital employed efficiency (CEE), and structural capital efficiency (SCE), while EQ was measured using value relevance. The theoretical anchor of the study was signaling theory. Of the twenty six listed insurance firms in the study period (2012 to 2020), only twelve firms with complete data were selected. Data extracted from the annual reports of the firms, and from the Daily Official List of the Nigerian Exchange Group for the study period were analysed using the regression technique. Findings revealed that ICE had a positive and significant relationship with value relevance, but a negative relationship with leverage (the control variable in the analytical model). The study therefore concluded that intellectual capital efficiency is positively associated with earnings quality, and recommended that insurance firms should enhance their ICE because of its relevance in the knowledge economy.

Keywords: Intellectual capital efficiency, earnings quality, value relevance, leverage

INTRODUCTION

Corporate earnings are very important to investors, regulators, practitioners and researchers, because it is the basis of assessing the performance of an entity from time to time. Incidentally, accounting standards permit heterogeneity in accounting choices and this enables managers to exercise considerable discretion in measuring and reporting earnings. Sometimes, the earnings numbers arising from the exercise of this discretion may portray a misleading picture of the underlying economic reality of a firm. The accounting scandals of the 2000s are largely attributed to reported earnings that did not reflect the true circumstances of the firms, and thereby misled investors and eventually led to huge losses (Trusell, 2019). Thus, while earnings are important, the quality of reported earnings is even more important. This is more so for opaque sectors like the Nigerian insurance industry where stakeholders have been groaning over deceptive practices that have led to perennial distrust in the industry.

Earnings quality is a complex construct with multiple definitions. The lack of universally accepted definition stems from the fact that there are different users of published corporate information; and these users view quality based on how useful the information serves their decision-making needs. The Financial Accounting Statement Board (FASB) also suggests that the level of earnings quality increases as a firm makes available more detailed financial information to its individual users for decision making purposes (FASB, 2018). Accordingly, in this study, earnings quality is measured using the value relevance of accounting information (VLR).

Insurance firms in Nigeria have been performing poorly in terms of their earnings. A number of them have reported losses, and some investors do not attach much value to the shares of insurance firms, leading to poor market valuation of their shares. Accordingly, insurance firms and investors in the industry are concerned about the quality of their earnings. This is more so as the primary objective of listed firms is to generate maximum earnings to enhance shareholders' wealth.

A substantial body of empirical research have shown that the performance of a business organization is driven largely by the quality and caliber of the workforce in the organization (Joia, 2007; Sonnier, Carson and Carson, 2007; Spender, 2011; Tayles, Pike and Sofian, 2007; Wall, Kirk and Martin, 2004), and that intellectual capital is the main driver of value creation and financial performance (Anuonye, 2016; Bontis, Keow and Richardson, 2000; Edvinsson and Malone, 1997; Ekwe, 2006; Ofurum and Aliyu 2018; Rufus, Festus and Dada, 2022). . This is not surprising because it is people not building or machines that develop new product ideas, improve processes, and help companies gain competitive edge. As a result of globalization and the emergence of knowledge based economy, firms are leveraging on core competences of human resources to gain advantages over their competitors (Bartlett &

Ghoshal, 1998). Accordingly, an evolving line of inquiry in financial reporting is the effect of intellectual capital on earnings quality.

Studies on the impact of intellectual capital have tilted heavily in favour of financial performance (Olarenwaju and Msomi,2021; Onyekwelu, Okoh and Iyidiobi, 2017; Paago and Chukwu, 2021). Research on the effect of intellectual capital on earnings quality of listed insurance firms is scarce both within Nigeria and outside Nigeria. This is despite the strategic role of the insurance industry to the socio-economic development of Nigeria, such as the risk transfer and indemnification of victims of insured losses. Ebirien and Nwanyanwu (2017) conducted a comparative study of the earnings quality of banks and insurance firms in Nigeria and found that insurance firms have lower earnings quality than banks. It is therefore pertinent to investigate whether intellectual capital efficiency is a significant determinant of earnings quality of listed insurance firms.

LITERATURE REVIEW

Conceptual review

Intellectual Capital Efficiency

The shift to the knowledge economy has brought to the forefront the issue of intellectual capital. This is because the knowledge economy emphasizes reliance on intellectual capital for value creation. Despite the increasing recognition of intellectual capital as a potent resource for value creation, there is lack of agreement on what the concept means. Thus, intellectual capital has been termed intangible asset (Sveiby, 1997), immaterial asset (Edvinsson and Malone,1997), human assets (Andriessen and Tiessen, 2000), invisible assets (Itami, 1987), strategic firm-specific assets (Dierickx and Cool, 1989), knowledge assets (Teece, 1998), hidden assets not well recognized in the financial statements (Roos and Roos,1997). Essentially, intellectual capital is the value of a company's knowledge, skills, processes, relationships, interactions,

trainings, and other intangible resources that creates competitive value for an entity. IC has been classified into two, three or four components. IC has been classified into human and organization capital (Roos and Roos, 1997), human, structural and relational capital (Bontis, 1998). And some studies include capital employed (Pulic, 2000, 2004).

The IC classification often used in accounting literature recognises three dimensions of IC, namely, human capital (HC), structural capital (SC), and capital employed (CE); and these components are measured using value added intellectual coefficient (VAIC) introduced by Pulic (1998). Human capital refers to human ability to solve problems; the skills, knowledge and experience of individual employees within an organization. It is the collective capabilities of an organization in extracting the best solutions using the knowledge of its individuals. (Bontis, 1998, 2001). Structural capital is the “knowledge that stays within the firm at the end of the working day. It comprises the organisational routines, producers, systems, culture databases, etc” (MERITUM, 2002, p.11). Structural capital includes infrastructure, information technology, databases, product technology, process handbooks, organization structure and routines and intellectual property elements such as brands, trademarks, copyrights and patents (Bontis et. al., 2000). Capital employed refers to the financial resources and physical capital deployed by an entity in conducting its activities. The VAIC model measures IC components in terms of their efficiencies; thus, the IC components are human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (HCE). The sum of these components is often referred to as intellectual capital efficiency (ICE). VAIC is an indicator of performance; therefore, the combined effect of the IC components measures IC performance, and it is associated with the efficiency in IC utilisation (Kasoga, 2020; Ousama, Hammani and Abdulkarim, 2020).

Earnings quality

Earnings are the core source of firm-specific information for investors. The quality of reported earnings has remained paramount to users of financial statements. Yet earnings quality is a multidimensional construct lacking in universally agreed definition and measurement (Penman and Zhang, 2002; Revsine, Collins and Johnson, 2001). Dechow and Schrand, (2004, p. 5) stated that “a high-quality earnings number is the one that accurately reflects the company’s current operating performance, is a good indicator of the future operating performance; and is a useful summary measure for assessing firm value”. Dechow, Ge and Schrand (2010, p.344) argued that “higher quality earnings provide more information about the features of a firm’s financial performance that are relevant to a specific decision made by a specific decision-maker”.

Researchers operationalized the qualitative characteristics based on properties or attributes of earnings. In examining the relationship between earnings quality and cost of equity, Francis et al. (2004) identify seven attributes of earnings, such as accruals quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism. They grouped the attributes into two: market-based attributes and accounting-based attributes. Market-based earnings attributes include conservatism, timeliness and value relevance. These attributes are measured using both market data and accounting data, assuming that economic income can be reflected by the function of earnings that proxies as stock returns.

Earnings are deemed relevant if they are capable of influencing the economic decisions of users by helping them evaluate past, present or future events or confirming, or correcting, their past evaluations. One of the methods of measuring earnings quality that takes into consideration the issue of *relevance* is the value relevance approach (Dechow et al., 2010). Relevance is a fundamental characteristic of accounting information according to IASB Conceptual Framework. The Conceptual Framework (2010) states that financial information is regarded as relevant if it influences the economic decisions of users by helping them evaluate past, present

or future events or confirming or correcting their evaluations. Barth et al. (2001) and Kothari (2001) defined value relevance as the association between share price and accounting numbers. If capital market participants consider earnings value relevant, it is expected that they would factor it into their market valuation of the firm. A number of studies have been conducted on the earnings quality of the insurance firms in Nigeria using accounting measures such as value relevance (Chukwu, 2017) and earnings smoothing (Chukwu, Obara and Chukwu, 2016), earnings management (Araoye and Obafemi, 2021), earnings predictability (Ebirien, Nkanbia-Davies and Chukwu, 2019), but these studies did not evaluate the association between intellectual capital efficiency (ICE) and earnings quality (EQ).

Theoretical Foundation

Signaling theory is an important theoretical framework to explain how intellectual capital is associated with earnings quality (measured by value relevance of accounting information). The theory was developed by Michael Spence to address the knowledge gap between organizations and prospective employee, and has become almost universally applicable to every field of endeavour. Notable among them are human resources management and business such as value of board characteristics, top management team characteristics and finance (Cetro, 2004; Lester et al., 2006). The use of signaling theory has gained momentum in the management literature in recent years as scholars have expanded the range of firm's potential signals (such as debts, dividend, insiders buying back shares and so on) and the contexts in which signals occurs. Signaling theory is fundamentally concerned with reducing information asymmetry between two parties (Spence, 2002), which arises when the two parties have access to different levels and types of information (Bamberger, 2008). The insiders (directors, managers) obtain both positive and negative information about the organization and they must decide whether or not to communicate this information to outsiders (investors, customers). Corporate financial

decisions by potential investors and other stakeholders are results of signals sent by company's managers / directors to investors to shake off their information asymmetry.

The application of signaling theory in finance is based on the belief that information on a company's financial health is not available to all parties in the market at the same time. A study of corporate governance for example, showed how chief executive officers signal the observable quality of their firm to potential investors via the observable quality of their financial statements (Zhang and Wiersema, 2009). Thus reporting earnings is a veritable tool of information provision/signaling to present and potential investors, creditors, and other stakeholders.

It is argued that managers are quick in disclosing good news (say increased profit) than bad or negative news such as loss of market share or reduced profit because of the link of their performance to their compensation and career concern (Skinner, 1994, Kothari et al., 2009), and the need to gain investors' confidence (Leventis and Weetman, 2004). Firms with high intellectual capital efficiency might report earnings in timely manner to signal their credibility and competence. This explains the choice of Signaling theory in exploring the relationship between intellectual capital efficiency (ICE) and earnings quality (EQ) of listed insurance firms.

Empirical review and hypotheses development

This study is aimed at determining the effect of IC efficiency on the EQ of Nigerian listed insurance firms. Previous studies have examined the relationship between ICE (using the VAIC model) and EQ using different measures of EQ (such as earnings predictability, value relevance, earnings restatement, accrual quality), Available research evidence has shown that a positive relationship between ICE and a number of EQ variables such as earnings predictability (Asadollahi, Taheri and Niazi, 2013; Marzban et al., 2014), asymmetric cost

behaviour, especially in post IFRS period (Yang, 2019), earnings stability (Parast, Delkhat and Jamshidi, 2013; Taheri, Asadollahi, and Niazi, 2013), cumulative abnormal return of a firm's share price (Dumay and Tull, 2007), and sustainable income (Marzban et al., 2014). Despite the evidence in the literature suggesting that ICE has a positive effect on EQ, an insignificant relationship has also been documented as Irawati et al. (2018) found no relationship between ICE and earning management. In further evidence of a positive relationship, Zanjirdar and Chogha (2012) established a positive and significant relation between ICE and EQ measures including earning stability, earning predictability, linkage of earning and share value, and linkage of operational cash flow, while Jin and Wang (2020) reported that ICE restricts banks' risk-taking behaviors and enhances their accounting conservatism. Azizi, Davoudi and Farahani, (2013), Murwaningsari and Ardi (2018), Sarea and Alansari (2016) and Sowaity (2022), also documented a significant and positive relationship between ICE and EQ. Hayati et al. (2015) used Indonesian data to established that ICE has positive association with EQ measured using the value relevance of accounting information before and after IFRS convergence. Given the weight of literature in favour of a positive relationship between ICE and EQ, the hypothesis for this study is formulated as follows:

Intellectual capital efficiency has positive effect on earnings quality of insurance firms in Nigeria.

METHODOLOGY

Research Design

This study empirically seeks to investigate the relationship between intellectual capital efficiency (ICE) and the earnings quality (EQ) of listed insurance firms. This required utilization of secondary data which the researcher did not have control over. Accordingly, the study adopted the *ex-post facto* research design which is a type of quasi-experimental research

design, which focuses on after-the-fact and utilizes the data for analysis that were existing at the time of investigation (Kumar, 2011).

Population and sample

The population for the study consists of all listed insurance firms listed 2012 and 2020. The Fact Books of the Nigerian Stock Exchange showed that there were twenty two listed insurance firms within the period. The study employed census sampling technique in determining the sample size since the population is small. However, since some insurance firms did not have annual reports in the years of sample period due to factors such as merger and acquisition and delisting amongst others, the study applied some filters. Firms that did not have complete annual reports and relevant data in all the years of the sample period were excluded from the sample. The procedure produced a sample of 12 insurance firms with 108 firm-year observations for the period 2012 to 2020.

Table 1 Sample Selection Procedure

Description	No of Firms	Firm-Years
Listed insurance firms between 2012 to 2020	22	234
Less delisted office	2	18
	20	180
Less firms with incomplete data	8	72
Final sample	12	108

Source: Odoemenam (2022)

Data and model

The study used data from the annual reports of the firms in the sampled firms and share price data from the Daily Official List of the Nigerian Stock Exchange. Data collected were analysed using the regression technique The analytical models are as follows:

$$VLR_{it} = \Psi_0 + \Psi_1 ICE_{it} + \Psi_2 LEV_{it} + \varepsilon_{i,t}$$

Where for insurance i at year t , the variables are defined as in Table 3

Table 2 Variables in the Models

Notation	Description
VLR	Value relevance (dependent variable)
ICE	Intellectual capital efficiency (independent variable)
LEV	Leverage (control variable)
E	Error term
Ψ_0	Intercept
Ψ_1, Ψ_2	Regression coefficients

Source: Researcher's compilation, 2022.

The study introduced leverage as a control variable. The inclusion was based on prior studies which showed that leverage is a significant determinant of the earnings quality of firms. The use of control variables in models dealing with the relationship between ICE and EQ is consistent with prior studies (Mojtahedi, 2013; Sowaity, 2022). Firms with high leverage are potentially risky and likely to manipulate earnings (DeFond & Jiambalvo, 1994; Richardson, Tuna and Wu, 2003). Richardson et al. (2003) examined the usefulness of accounting information in a sample of their restated annual earnings and provided evidence showing that leverage is a motivation for aggressive accounting policies.

Measurement of Variables

The measurement of the variables for firm i at year t is as follows.

Dependent variables

VLR Explanatory power of price model as in Collins et al. (1997) estimated for each firm over a four-year rolling window.

Independent variable

ICE Sum of HCE, CEE and SCE

HCE (Total of employees' expenses); SCE (Structural capital divided by value added, where structural capital is Value Added minus total employees' expenses); CEE (Value Added divided by capital employed, where capital employed is the net book value of assets)

Control variable

LEV Leverage (Total Liabilities divided by Total Assets)

RESULTS

Table 3 Descriptive Statistics

	N	Min.	Max.	Mean	Std Dev	Skewness
Value relevance (VLR)	108	0.00	0.99	0.4063	0.30377	0.169
Intellectual capital efficiency (ICE)	108	-4.86	12.55	2.4724	2.34303	-0.055
Leverage (LEV)	108	0.07	1.28	0.5654	0.26689	0.24

Source: SPSS version 21

Table 3 presents the descriptive statistics of the variables used in the study. The minimum value for VLR (value relevance) is zero, indicating that some firms have a very low level of earnings quality. The maximum value of 0.99 suggests that there are some insurance firms whose earnings quality (measured by VLR) is high. The mean value of 0.4063 indicates that the average value of EQ in the insurance industry is below 50 per cent. The minimum value of ICE (intellectual capital efficiency) is -4.86, while the maximum value is 12.55. This indicates a wide range in IC efficiency in the insurance industry. This fact is supported by the standard deviation figure of 2.34, which is high relative to those of VLR and LEV. The maximum value of LEV is 1.28, suggesting that in some insurance firms total liabilities exceed value of total assets. The skewness values fall within -2 and +2, suggesting that the data set is symmetrical. This means that the assumption of normality is not violated (Hair et al., 2022 p. 66).

Table 4 Bivariate Correlations

		VLR	ICE	LEV
Value relevance (VLR)	Pearson Correlation	1	0.179*	-.363**
	Sig. (2-tailed)		0.064	.000
Intellectual capital efficiency (ICE)	Pearson Correlation	0.179	1	-0.023
	Sig. (2-tailed)	0.064		0.812
Leverage (LEV)	Pearson Correlation	-.363**	-0.023	1
	Sig. (2-tailed)	0	0.812	

N

108

108

108

**, * Correlation is significant at the 0.01 level, 0.10 level, respectively

Table 4 presents the bivariate correlations of the variables in the study. The correlation between VLR (value relevance) and ICE (intellectual capital efficiency) is positive, approximately 18 per cent and significant at the 10 per cent level. The correlation between VLR and LEV is negative and significant at the 5 per cent level. The correlation between ICE and LEV is negative but insignificant. Importantly, none of the correlations is up to 50 per cent, indicating that absence of multicollinearity.

Table 5 Model Summary

Model	R	R sq	Adj R Sq	Std. Error	F value	Sig.	Durbin-Watson
1	.401a	0.161	0.145	0.28087	10.077	0.000	1.939

a Predictors: (Constant), Leverage, Intellectual capital efficiency

b Dependent Variable: Value relevance

Table 5 presents the model summary from regression of VLR on ICE and LEV. The adjusted R² is 15 per cent, indicating that the independent variables explain 15 per cent of the variations of VLR. The F value is significant at the one per cent level, suggesting that the model fits the data. The Durbin-Watson value of 1.939 is within the acceptable range 1.5 to 2.5, therefore there is no issue of autocorrelation.

Table 6 Coefficients

Model		Coeff	Std. Err	T	Sig.	Collinearity Statistics Tolerance	VIF
1	(Constant)	0.583	0.07	8.295	0.000		
	Intellectual capital efficiency	0.022	0.012	1.906	0.059	0.999	1.001
	Leverage	-0.409	0.102	-4.02	0.000	0.999	1.001

Dependent Variable: Value relevance

Table 6 presents the coefficients from the regression of VLR on ICE and LEV. The coefficient on ICE is positive and significant at the 10 per cent level, suggesting that ICE has a positive and significant relationship with VLR. The coefficient on LEV is negative but significant,

suggesting that LEV is negatively associated with VLR. The VIF number for each variable is 1.001, further buttressing the assertion made earlier on the absence of multicollinearity in the data set for this study.

Further regression diagnostic

In the section above, the results of the study have shown that the regression assumptions for normality, autocorrelation, and multicollinearity have not been violated. A further test for homoskedasticity was conducted using Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. The output from STATA version 12 is given below.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of vlr

chi2(1) = 1.92

Prob > chi2 = 0.1660

The Breusch Pagan test for heteroskedasticity has a p value well above the threshold of 0.05, with $\text{Prob} > \chi^2 = 0.1660$. This means that the null hypothesis of homoskedasticity is supported, and heteroskedasticity is rejected. The results therefore do not violate the assumption of homoskedasticity.

DISCUSSION OF FINDINGS

The descriptive statistics showed a minimum VLR figure of zero, indicating that in at least one of the firms in the sample, the EQ was so poor that investors could not use the earnings numbers for equity valuation. The mean of VLR was less than 50 per cent. This suggests that earnings information provided by some insurance firms is not value relevant. Some studies on insurance

firms have reported that EQ in the insurance industry is poor. Such studies used different measures of EQ such as value relevance and earnings smoothing (Chukwu, 2017; Chukwu, Obara and Chukwu, 2016). These results are supported by the assertion that stakeholders' perception of the industry is poor due to perennial distrust of insurance firms' practices (Uche, 2022) and the opaque nature of the industry.

Results of the regression analysis suggest a positive relationship between IC efficiency and earnings quality. This finding is supported by prior studies based on data from other countries (Azizi et al., 2013; Murwaningsari and Ardi, 2018; Sarea and Alansari, 2016; Sowaity 2022). Since value relevance is the measure of EQ, it means that investors regard IC efficiency as an important attribute of a firm's future prospects and therefore consider such information useful in pricing decisions, such that the more ICE a firm has the more favourably it is valued by the market. The favourable disposition of investors towards ICE may be because of its relevance as a competitive weapon in the current knowledge economy.

The relationship between leverage (LEV) and value relevance (VLR) is significant but negative. This fact is supported by both the bivariate correlation and the sign and p value of the coefficient of LEV. The negative relationship may be because firms with high leverage are potentially risky and likely to manipulate earnings (DeFond & Jiambalvo, 1994; Richardson et al., 2003).

Put together, ICE (intellectual capital efficiency) has positive effect on EQ (earnings quality) and therefore sends a positive signal that leads to favourable market valuation, while leverage potentially leads to earnings manipulation (poor earnings quality) and this provides a negative signal for market valuation. Signaling theory therefore explains the nature and direction of relationship between ICE (intellectual capital) and VLR (value relevance) as well as between leverage and value relevance.

Conclusion and recommendations

This study evaluated the relationship between intellectual capital efficiency (ICE) and earnings quality (EQ) in insurance firms in Nigeria. ICE was determined by aggregating HCE (human capital efficiency), SCE (structural capital efficiency) and CEE (capital employed efficiency), while EQ was measured using VLR (value relevance). Results from test of hypothesis showed a positive relationship between ICE and earnings quality, possibly because of the positive contribution of ICE in corporate competitiveness. Leverage was used as a control variable, and the results showed a negative relationship between LEV and EQ (earnings quality). The study therefore concludes that ICE (intellectual capital efficiency) is positively associated with earnings quality in the Nigerian insurance industry. It is therefore recommended that insurance firms should focus on improving its intellectual capital as it is favourably valued by the market. This recommendation is particularly useful for insurance firms as many of them are struggling with poor market valuation due to perennial stakeholders' distrust of the industry.

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