EFFECT OF INTELLECTUAL PROPERTY ACCOUNTING ON ORGANIZATIONAL GROWTH IN NIGERIA

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Abstract
The work is on the effect of intellectual property accounting on organizational growth with particular reference to firms listed on the Nigerian stock exchange. The study deals with secondary u.ira from the Nigeria stock exchange (NSE), Central Bank of Nigeria Statistical Bulletin, CR V annual reports, Economic Journals and textbooks. Cochran formula is used to select the sample population of the study. Independent t-test were undertaken to determine whether there are significant differences between each of the group. The dependent variables in the study are economic value added, cash value added, market value added, refined economic value added and the only control variable is firm size. Findings of disclosure reveal that intellectual capital intensive sector firms have higher intellectual capital disclosure than non intellectual capital intensive sector putting into consideration that the objective of the study is to examine whether intellectual capital financial disclosure interact with each other to inference the cost of equity capital. Therefore, the study recommends that both financial and intellectual capital should be disclosed.

Introduction
Background Of The Study
The survival of any organization, especially within an ever increasing globalised world, depends largely on its ability to innovate. Organizational intelligence, represented by information and knowledge systems, the skills and abilities of employees, the quality of production processes and customer service, each has a great impact on its ability to innovate. To succeed in this context, or simply remain viable, organizations must be innovative (Govindarajan and Trimble, 2005).

According to Lev and Zambon (2003), economic development in recent years has been characterised by continuous innovation, the spread of digital and communication technologies, the relevance of network

forms of organization, and the prevalence of soft, intangible and human factors. Firms operating in competitive, global markets recognise that the traditional reliance on tangible assets as value drivers, has been supplemented - or even superseded - by softer, intangible asset forms. Hence, for most organizations, intellectual capital is now recognized as an integral part of the firm's value-creating processes (Bukh, 2003; Holland, 2003).

However, whilst intellectual capital is considered a major contributor in the value-creating processes in the firm (Beattie and Thomson, 2007), the costs involved with these intangible assets are either immediately expensed in the financial statements or arbitrarily amortised, and therefore are not adequately reflected in the financial statements. For example, the 'new' intangibles such as employee competencies, customer relationships and computer and administrative systems are not recognised in the traditional financial reporting model.

Although regulatory reporting requirements require traditional intangibles such as brand equity, patents and trademarks to be incorporated in the financial accounts, they are only recognised if they meet some stringent criteria (Holland, 2006; Guthrie *et al.*, 2007). Consequently, the book values of firms are poorly related to the market values (Holland, 2003; Beattie and Thomson, 2004). For example, Lev (2001) documents an increase in the mean market-to-book ratio from 1.0 in 1977 to 6.0 in 2000 for the S&P500 firms. Gu and Lev (2004) also show an average market to- book ratio of 4.5 for the S&P500 firms in the year 2003. Similarly, Beattie and Thomson (2004) reveal that the mean market-to-book value for FTSE 100 firms to be 2.52 for the year 2002/2003. These results indicate a substantial gap between book and market values of firms.

Modern firms are very complex organisations. This complexity is influenced by the number of different departments and services provided, each having its own leadership and being quite differentiated. Furthermore, a mix of industrial, scientific and technological procedures is conducted on humans, with a diverse set of cultural, educational and social components intertwined. For this study, the firms provided an excellent context to investigate whether the Intellectual Capital constructs, i.e. Human Capital, Structural Capital, and Relational Capital, could influence its potential to innovate. The influence of Intellectual Capital on the innovative capacity of a firm was therefore investigated, and the innovation constructs considered for this study were the adoption and creation of a product, and process and management innovation.

Objective Of The Study

The general objective of the study is to determine the effect of intellectual property accounting on organizational growth. The specific objectives are:
   i.   To examine the effect of the economic value added on intellectual property accounting on organizational growth.
   ii. To examine the effect of market information on intellectual property accounting on organizational growth.
   iii. To determine the effect of staff knowledge on organizational growth.
   iv. To determine the effect of innovative capacity on organizational growth.

Research Hypotheses

The research study identified four hypotheses:
$H0_1$:   There is no significant relationship between economic value added and intellectual property accounting on organizational growth.
$H0_2$:   Market information on intellectual property accounting does not affect organizational growth.
$H0_3$:   Staff knowledge does not affect organizational growth.
$H0_4$:   Innovative capacity does not affect organizational growth.

Theoretical Framework

In this research, theories of Caba and Sierra (2001)on intellectual capital management including three aspects of human capital management, structural capital management, and relational capital management are used as theoretical frameworks to evaluate the effects of intellectual property accounting on organizational growth. The basic assumption of these streams of the theories is that firms which provide more information about their activities reduce information asymmetry in the capital markets. One stream argues that an environment of information asymmetry introduces adverse selection into the market (Diamond and Verrecchia, 1991; Handa and Linn, 1993). Welker (1995) points out that such adverse selection leads to a reluctance by uninformed investors to trade shares in order to 'price protect' against potential losses from trading with other better informed market participants. This reluctance to trade reduces market liquidity in the firm's shares (Amihud and Mendelson, 1986; Welker, 1995; Handa and Linn, 1993). In this respect, firms that wish to raise capital will be forced to issue shares at a higher discount because investors pay less for shares with high transaction costs (Botosan, 2006).

Consequently, the share issue proceeds will be lower. Handa and Linn (1993) argue that firms can lower the discount at which their shares are issued by improving disclosure to reduce information asymmetries arising either between the firm and outside investors or between buyers and sellers firm's shares. Amihud and Mendelson (1986) also suggest that firms with larger bid-ask spreads have higher cost of capital, and by disclosing more information they reduce the bid-ask spreads. Similarly, Diamond and Verrecchia (1991) and Easley and O'Hara (2004) contends that by improving disclosure, firms enhance the liquidity of their shares thereby attracting increased demand for the shares, which increases share prices. Bloomfield and Wilks (2000), in their experimental study, also document that greater disclosure of information about the firm leads investors to trade shares at relatively higher prices, hence providing greater liquidity of the firm's shares.

Empirical Review

Tan, Plvmn and Hancock (2007) in a study attempted to examine the relationship between intellectual capital and financial returns in companies. The results showed that there is a significant positive relationship "between the current and future intellectual capital and financial returns of companies. Secondly," the impact of intellectual capital in the financial performance of companies in different industries is different. Myhalyk Tanja & Helena Rhodes (2007), in their study examined the impact of intellectual capital components of financial performance in the hotel industry in Slovenia. The survey results showed that there is a significant positive relationship between the components of intellectual capital and financial performance of this industry and secondly, coefficient of high impact of communicational capital compared to other components of intellectual capital on corporate financial performance. Garsia & Martiner (2007) in an experimental study examined the relationship between intellectual capital information used in decision- making investments in Spanish companies.

Ahmat, Bozbora (2007) ranked intellectual capital measurement indicators using Analytical Hierarchy Process (AHP) and found that the development and creation of the strategic value is of the most important indicators of intellectual capital in the organization. Shen Tai & Chen Tung (2008), provided a new model for intellectual capital performance evaluation by combining fuzzy approach 2-tuple with multiple Criteria Decision Making technique (MCDM) and they tested it for advanced companies in Taiwan.

Ali Anvari, (1984), in his study has tested five measuring methods for estimating intellectual capital. Statistical test results showed that the suggested fourth and fifth methods have a high and significant correlation with market value of shares and with respect to the higher coefficient of determination have more explanation capability compared to the first, second and third methods. Saghafi, Ali and Arash, (1388) (1388)in their studies showed that there is a significant positive relationship between intellectual capital and financial productivity, intellectual capital and future financial productivity, intellectual capital growth rate and future financial productivity growth rate in investment companies in Tehran stock market .

Intellectual capital of an organization includes intangible and intellectual properties by returning which to the new service and product processes, the organization creates value. The term "Intellectual Capital" was introduced first by John Kenneth Galbraith in 1969 (Feiwal, 1975; Nick, 1998). Before that, Drucker (1999)

had introduced the term "knowledge workers" (Feiwal, 1975). Roos and Roos (1997) define the intellectual capital as all processes and properties that are normally not included in the statement of financial position. This definition includes all the intangible properties like trademarks and copyrights which are assessed by the modern accounting methods. Stewart considers the intellectual capital to be the information, intellectual properties, and experiences which are used to create wealth (Stewart, 1997). Edvinsson and Sullivan (1996) define the intellectual wealth as the knowledge that can be converted to the value and introduce it as practical experiences, organizational technologies, client relationships, and professional skills for achieving competitive advantages.

In Bontis' (2001) point of view, intellectual capital is the individual and organizational knowledge that helps to sustainable competitive advantage. This capital acts follows the principles of "economy of abundance"; that is to say using this capital not only doesn't diminish its value, but also adds on it. Generally speaking, the intellectual capitals are like the muscles of a body; they go dead when not being used (Cohen *et al.*, 1993). Chaharbaghi and Cripps (2006) point out to the idea that ntellectual capital is the major sustainable motion power of the organizational performance that reflects the real value of the organization better than anything. Kujansivu and Lönnqvist (2007) in an article titled "Research on Value of Efficiency of Intellectual Capital" explain that the intellectual capital is critically important for competitiveness of the companies, regardless of the type of the industry; it is even more important for knowledge based companies, as their resources are mostly intangible.

METHODOLOGY
Research design
This study used ex-post facto research design.

Sources Of Data
Secondary source of data was employed in this analysis. The data used were gotten from major sources which include; Nigerian Stock Exchange (NSE), Central Bank of Nigeria statistical bulletin, CBN Annual Reports, Economic journals and textbooks.

Population Of The Study
The population of this study consists of all the companies listed in Nigerian Stock Exchange during the period 2004 to 2014.

Sample Size Determination
The companies which have the following conditions were included in the sample population:
- Their financial years should be 31st December and no changes should occur during the studied time period.
- During the period of review, the companies should be active continuously and their shares should be traded importantly without interruption.
- Information required for research should be presented completely within the given period.
- Companies which have intermediation activities and investments
- They should not lose money during the period of study and the company's book value (shareholders' rights) should not be negative.

Using the elimination method, the companies are selected in the order presented in the table 3.1.Owing to the large number of studied companies, Cochran formula has been used to select the sample population of the study. As forth five percent coefficient of error and ten percent accuracy of estimation, the number of sample will be 59 companies.

$$n = \frac{156 \times (1.96)^2 \times 0.5 \times 0.5}{156 \times (0.10)^2 + (1.96)^2 \times 0.5 \times 0.5} \approx 59$$

Table 3.1: Number of companies remaining after imposing restrictions

Description	Number
Sample population members	337
Companies whose end of financial years are 31st December	73
Companies which have intermediation activities and investments	26
The number of companies which have lost money during research period	66
Companies which have not provided information needed to research	16
Total companies eliminated from the study	(181)
Companies used in the formular of Cochran	156

Taking the calculation into consideration, the number of companies of sample population will be 59. Therefore, this number of companies has been selected based on the proportion of each industry to the total society and then from each industry on the basis of simple random sampling, a sample is selected. Table 3.2 identifies the industries that the selected companies are from.

Table 3.2: Frequency of sample population members for each kind of industry

Industry	Number
Banks and insurance	4
Telecommunications services	2
Media and publishing	4
Biotech and Pharmaceuticals	4
IT	5
Aerospace and Aviation	2
Business service providers	4
Food and beverages	6
Engineering	4
Mining	4
Chemicals	4
Electronic and Electrical equipment	4
Real estate	4
Utility	4
Retailing	6
Total	**59**

Method Of Data Analysis
To analyze data statistically and test research hypotheses, descriptive and inferential statistics such as mean, median, standard deviation, t-tests, spearman correlation were calculated to test the hypotheses. The relationships between independent and dependent variables utilizing the Fisher distribution are measured. In this study, LS method was used to estimate regression equation. The significance of correlation coefficients was tested using the T-test.

Model Specification
In this study, the operational model of intellectual capital has been adopted from the fifth model of intellectual capital of Anvari and Rostami (1384 on Solar), which has the highest correlation with the stock market value, it is as follows:
$IC = \beta_0 + \beta_1 EVA_t + \beta_2 MI_t + \beta_3 SK_t + \beta_4 I_nC_t + \mu_j$
EVA_t is the economic value added, MI_t is the company's market information, and SK_t is the staff knowledge, InC_t, is the innovative capacity.

Economic value added:
Economic value added= Net operating profit after tax- Weighted average cost of capital (Early period book value of assets)
$EVA_t = NOPAT_t - WACC (Capital_{t-1})$

Market information
MI = This is the information gathered from customers which when acted on gives room for efficiency.
Staff knowledge
SK=This is the knowledge of staff that bring about creativity.

Innovative capacity
InC=is what the organization has in place that make them different from other competitors.

Control Variable
In this study, firm size has been considered as the control variable. This variable along with financial leverage has been used in Riahi-Belkaoui (2003) and Shiu (2006) to control the impact of intellectual capital on the company's performance. The total market value of shares has been regarded as the firm size representative in this research calculated as follows: Number of company's common stock multiplying the closing price per share in the end of financial period.

Data Presentation And Analysis
This chapter presents the results of analysing the effect of intellectual property accounting and the relevant disclosure with cost of capital data. Descriptive statistics for intellectual capital disclosures, and related variables are presented.

Table 4.7: Descriptive statistics

Variable/ Descriptive Statistics	EVA	MI	SK	InC	IC	SI
Mean	10.96477	7.436702	10.86994	2.391920176	10.61157	10.61157
Median	10.95867	9.325149	10.86627	2.672748578	10.48313	10.48313
Maximum	11.07034	9.88128	11.03633	14.46031774	10.91211	10.91211
Minimum	10.90333	0	10.6436	0	10.43319	10.43319
Standard Deviation	9.060141	6.745711	8.132398	2.9350005	6.190409	7.098691
Kurtosis	0.036553	0.058491	0.054689	0.059066	0.005796	0.029875
Skewness	0.105748	0.019384	0.062353	0574084	0.158202	0.144179
Quartile statistics	1.622823	0.8138	3.3823047	2.1053315	3.713315	5.969267
P-value	0.4442223	0.8563037	0.305743	0.312413	0.156194	0.458791
Frequency of observations	295	295	295	295	295	295
Number of sections	59	59	59	59	59	59

Hypothesis 1: There is no significant relationship between economic value added and intellectual property accounting on organizational growth.

EVA = α_0 + α_1Ic + α_2Si + Ui

In the first hypothesis F-statistics is equal to 27.71 and with the P-Value (equal to 0.000) display meaningfulness of all regression and all coefficients effective in regression. On the basis of data, the T-test is as follows:

EVA = 10.44 + 0.45 Ic + 0.48 Si + Ui
t: (3.56)   (4.32)   (2.85)

Owing to the fact that the P-value calculated for each variable is smaller than the given error level, so all the regression coefficients are significant. The amount of intellectual capital coefficient is .45, and t -statistics is equal to 4.32 which reflect meaningfulness and effect of each of the variables on the total regression. In the first hypothesis, according to the calculations $R^2 = \bar{R}^2 = 0.65$ which shows that regression line could attribute exactly 65% of EVA changes to the changes of IC independent variable.

Also, Durbin-Watson (D.W) statistics in this model is equal to 1.99 which represents slack of the first type linear self-correlation in disturbing components of the model. Statistics related to Wald test for x^2 and F is equal to 117.9 and its P-value is 0.000 which demonstrate significance and effectiveness of this variable in the total regression.

Hypothesis 2: Market information on intellectual property accounting has no significant effect on organizational growth.

MI = β_0 + β_1Ic + β_2Si + Ui

In the second hypothesis, F statistics is equal to 21.21 and P-Value (equal to 0.000) which reveal meaningfulness of all regression and all coefficients effective in relevant regression line. On the basis of data, the T-test is as follows:

MI = 24.61 + 1.34 Ic + 0.16 Si + Ui
t: (2.88)   (2.53)   (1.94)

Since the calculated P-value is smaller than the given error level, there is significant relationship between regression coefficients. Intellectual capital coefficient in the regression is 1.34 and F statistics is equal to 2.16 and P-value smaller than 5% which show meaningfulness and effect of each of the variables on the total regression. In this hypothesis, R^2 and $\bar{R}^2$ are 0.75 which demonstrates that regression line could ascribe exactly 75% of MI changes to the changes of IC independent variable.

Furthermore, Durbin-Watson statistics in this model is equal to 2.06 which show slack of the first type linear self-correlation in disturbing components of the model. Statistics related to Wald test for x^2 and F is equal to 424.2 and its P-value is 0.000 which represents significance and effectiveness of this variable in total regression.

Hypothesis 3: Staff knowledge has no significant effect on organization growth .

$SK = C0+C1Ic+C2Si+Ui$

In the third hypothesis, F statistics is equal to 47.45 and P-Value (equal to 0.000) which reveal the meaningfulness of all regression and all coefficients effective in relevant regression line. On the basis of data, the T-test is as follows:

SK = 15.39 + 1.2 Ic + 1.59 Si + Ui
t: (2.88)   (2.53)   (1.94)

Due to the fact that the calculated P-value is smaller than the given error level, therefore there is significant relationship between regression coefficients. Amount of intellectual capital coefficient is equal to 1.2 and t statistics is 2.53 and P-value smaller than 5% demonstrate the significance of this variable. In the third hypothesis $R^2 \text{ and } \bar{R}^2$ are 0.76 which shows that regression line could attribute exactly 76% of SK changes to the changes of IC independent variable. Furthermore, Durbin-Watson statistics in this model is equal to 1.83 which shows slack of the first type linear self-correlation in disturbing components of the model. Statistics related to Wald test for x2 and F is equal to 378.2 and its P-value is 0.000 which display significance and effectiveness of this variable in the total regression.

Hypothesis 4: Innovative capacity has no significant effect on organization growth.

$InC= D0+D1 IC+D2Si+Ui$

In the forth hypothesis, F statistics is equal to 90.24 and P-Value (equal to 0.000) which represent meaningfulness of all regression and all coefficients effective in relevant regression line. On the basis of data, the T-test is as follows:

InC= 7.95+0.77 IC +0.82 Si+Ui
t: (2.87)   (7.04)   (9.59)

Since the calculated P-value is smaller than the given error level, there is significant relationship between regression coefficients. The amount of intellectual capital in the total regression is 0.77 and t-statistics equal to 7.04 and P-value much smaller than 5% and next to zero (0) reflect the meaningfulness of this variable in the total regression. In the forth hypothesis, $R^2 \text{ and } \bar{R}^2$ are 0.78 which represents that regression line could ascribe exactly 76% of InC changes to the changes of IC independent variable. Furthermore, Durbin-Watson statistics in this model is equal to 1.12 which demonstrates slack of the first type linear self-correlation in disturbing components of the model. Statistics related to Wald test for x2 and F is equal to 92.08 and its P-value is 0.000 which reveal significance and effectiveness of this variable in the total regression.

Regarding the obtained results, it was determined that variable coefficients in the estimation model for the dependent variables, i.e. economic value added, market information, staff knowledge and innovative capacity are not zero (0) and significance of all coefficients in the model was confirmed.

Also, firm size as the control variable is effective in estimating the dependant variables and wastes are not self-correlated. Moreover, normality of each of the research variables has been verified in the Descriptive statistics. Therefore, there is significant linear relationship at the 95% significant level between intellectual capital variable and economic value added, market information, staff knowledge, and innovative capacity, considering firm size as the control variable, during the research period. The following table shows a brief of intellectual capital estimations on the economic value added, market information, staff knowledge variables and innovative capacity (dependant variable) in the research hypotheses.

Table 4.8: Effect of intellectual capital (IC) on the dependant variables using GLS

Coefficients	Estimations on economic value added	Estimations on market information	Estimations on staff knowledge	Estimations on innovative capacity
C	10.44***	24.61**	15.39**	7.59**
(t-ratios)	(3.56)	(1.52)	(2.88)	(2.87)
Ci	0/45***	1.34***	1.20**	0.77***
(t-ratios)	(4.32)	(2.16)	(2.53)	(7.04)
Si	0.48***	0.16***	1.59**	0.82***
(t-ratios)	(2.85)	(3.08)	(1.94)	(5.95)
R^2	0.65	0.75	0.76	0.78
F	27.7	21.21	47.45	90.24
DW	1.99	2.06	1.83	1.12

Moreover, the effect of control variable on the four research hypotheses is as follows:

Table 4.13: Wald test of effect of effect of control variable (SI) in the research hypotheses

Statistics	Wald test statistics-First hypothesis	Wald test statistics-Second hypothesis	Wald test statistics-Third hypothesis	Wald test statistics-Forth hypothesis
Chi-square	117.92*** (0.0000)	424.2*** (0.0000)	378.22*** (0.0000)	92.08*** (0.0000)
F-statistic	117.92*** (0.0000)	424.2*** (0.0000)	378.22*** (0.0000)	92.08*** (0.0000)

Note: In the above two tables, * shows significance at the 10% level, ** significance at the 5% level, and *** significance at the 1% level.

Conclusions

In conclusion, this study investigates the relationship between intellectual capital disclosure and the cost of equity capital of Nigeria listed firms. The results of the study indicate that there is extensive disclosure of intellectual capital information by the firms. Overall, the study also reveals that firms with greater intellectual capital disclosure in annual reports have a lower cost of equity capital than firms with lower intellectual capital disclosures. In addition, firms that provide enhanced disclosures for both financial and intellectual capital disclosures do benefit more in terms of a lower cost of equity capital, suggesting that intellectual capital and financial disclosures are complementary.

Recommendations

Firms should be encouraged to provide enhanced disclosures from both financial and intellectual capital disclosures. Hence, firm with greater intellectual capital disclosure in annual reports have lower cost of equity capital than firms with lower intellectual capital disclosures.

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