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INTELLECTUAL CAPITAL AND MARKET PERFORMANCE OF NIGERIAN COMPANIES

Keywords: intellectual capital (IC), VAIC, market value (MV).

J E L Classification: 034, L1.

Abstract: This study is carried out on intellectual capital efficiency and the market value of Nigerian quoted companies. The specific objectives were to: determine the influence of human capital efficiency on market value of the listed Nigerian companies; examine the influence of structural capital efficiency on market value of the listed Nigerian companies; and evaluate the influence of capital employed efficiency on market of the listed Nigerian companies firms in Nigeria. The data were sourced from 2018 to 2022 annual audited accounts of the 117 companies quoted on the Nigerian Exchange Group. The regression technique was employed to analyse the data. The findings showed that capital employed efficiency positively influenced market value throughout the five years but the human capital efficiency and structural capital efficiency have mixed results. Human capital efficiency and structural capital efficiency were both

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positively and negatively influenced market value of the sampled Nigerian companies for the periods of observation. The study thus concluded that intellectual capital influenced the market value of the sampled Nigerian companies and provided the recommendation that the sampled companies should improve their investments on intellectual capital resources (such as staffs' training, staff welfare) and physical assets.

Introduction

Every company is going globally to meet the challenge of technology advancement and create value at the same time. For any company not to be left out or behind, it has to move according to the trend and remain sustainable. To remain sustainable in the global market, company must demonstrate its competitiveness and showcase it value relevance to the users of accounting information generally. Germane to this assertion is the current shift from tangible asset to intangible/intellectual capital value drivers. As a result of this shift, there is a need for valuation of intellectual capital drivers. The most challenging part perhaps is what way can these intellectual capital drivers' efficiencies be measured (Salman, 2022).

Intellectual capital has been at the helm of companies' value efficiencies creation (Oner, Aybers, Cinko & Avei, 2021; Salman, Ibrahim & AbdulKadir, 2015). The human capital components of intellectual capital deals with the value creation of employees of the company, while structural capital provides the overall structure, processes, routine, data based that is unique to individual company, and relational capital covers the networking of the company be it customers, suppliers, market coverage etc. Consequently, there is always a need to have best combination of all these IC components drivers because company's performance depends on their value creation efficiencies. Therefore, for company to be sustainable and achieve competiveness requires valuation IC efficiency as strategic resource. As strategic resource, intellectual capital should be properly managed and value by firm to increase its market price. According to a research estimation (Abdulai, Kwon & Moon, 2012; Okwy & Christopher, 2010), non-valuation of IC would reduce company's worth and value in the global market. Knowing the importance of IC, the Nigeria gross investment in IC resources is at least one trillion Naira which is 6.17 US$ billion a year in order to revolutionised the country's economy and also to improve company performance as company value is now driven by its IC resource. Despite this huge investment, Nigerian companies are regarded as worst in terms of performance in the glob-

al market (Okwy & Christopher, 2010). The question is what is responsible for the poor performance? The answer is no adequate disclosure of its IC (drivers) in the financial statement due to the fact that there has never been a consensus as to the reporting of IC drivers in the financial statement.

Apparently, lack of measurement of intellectual capital led to non-disclosure of IC drivers by many companies in Nigeria. As expected, this led to sharp difference between market value and book value of their asset (Salman et al., 2015; Holland, 2009). As submitted by Okwy and Christopher (2010) and Suraj and Bonitis (2012) millions of naira are lost by Nigerian companies in the global market as the true value and their wealth capacities (IC) are not adequately measured and disclosed in their annual reports.

Most companies are disclosing their intellectual capital (resources) as expense in their financial statement, not presenting this resource (IC) as asset that adds value to the companies because of the problem of measuring its efficiency. Therefore, there is the need to assess how Nigerian companies' intellectual capital efficiencies affect performance. Several studies had been carried out on the nexus between IC and companies' performance on individual company/sector basis. However, there are few studies that examined the relationship between intellectual capital and performance across sectors. This sectorial analysis becomes necessary because of the diversity of the Nigerian capital market. It is also assumed in this study that the behaviour of firm performance in response to intellectual capital for many sectors is different in the case of a single sector. To this end, this study examined the impact of intellectual capital on firm performance for 117 firms across 8 different sectors for 5 years (2018-2022) to fill the lacuna in the literature. However, specific objectives are to:

- determine the influence of human capital efficiency on market value of the listed Nigerian companies;
- examine the influence of structural capital efficiency on market value of the listed Nigerian companies; and
- evaluate the influence of capital employed efficiency on market of the listed Nigerian companies firms in Nigeria.

The second part of this study reviewed related literatures on intellectual capital and market value; third part presented methodology; fourth discussed the data analysed, while fifth part provided conclusion and recommendations.

Literature review

Intellectual capital

Intellectual capital/asset could be defined as intangible asset with economic value (Berry, 2004) which include patent, brand name, goodwill, employees' knowledge, ability, skill, experience, capabilities, networking, copyright, processes, trademark, daily routine and procedures (Salman, 2022; Lev, 2001). In knowledge-based economy, intellectual capital is considered to be more productive in the creation of value than tangible assets, therefore, organization focused more on IC (non-tangible asset) than tangible assets as it is believed to be associated with high-level firm performance (Yousaf, 2022).

Companies' values are now based on the IC in the present knowledge era (Oner et al., 2021; Poh, Kilicman, Ibrahim & McMillan, 2018). Thus, several companies' measurement and evaluation of market performances had changed. Such companies include oil and gas, building and material, agro-allied, manufacturing and even financial institutions such as banks and insurance companies. Hence, Intellectual capital becomes the driver for sustainable corporate performances. Several studies argued that the IC efficiencies have direct influence on firm performance. Ordóñez de Pablos (2003) argued that it is the difference between market value and book value. Lev (2001) submitted that IC is a source of generating better performances in an organization. Poh et al. (2018) opined that IC is an element for assessing companies' performances.

Intellectual Capital Components

Some scholars classified IC into human capital and structural capital, relational/customer capital, organizational capital and innovation capital (Dahiyat, Khasawneh, Bontis & Al-Dahiyat, 2021; Mubarik, Bontis, Mubarik & Mahmood, 2021; Salman, 2022; Youndt & Snell, 2020; Sveiby, 1997a). However, there is a consensus as to three components of IC which are: human capital, structure capital, and relational capital (Salman, 2022; Mubarik et al., 2021; Youndt & Snell, 2020). However, two IC components (Human capital and structural capital) with capital employed are discussed in this study because they are the only components related to method (VAIC) used for calculating IC efficiency.

Human Capital and Market Value

Human capital covers knowledge, skills, education, individual competence, training, attitudes, innovative, creativity, experiences, and specializations (Dahiyat et al., 2021; Yousaff, 2021; Youndt & Snell, 2020; Bayraktaroglu, Calisir & Baskak, 2019). Hence, human capital is important component of a company's IC (Bontis, 1998). Human capital depends on individual characteristics, for instance, qualification, expertise, creativity, problem-solving, and capabilities. Human capital is an embedded in an employee. Human capital is an asset that is within the workers/employees even when leaving the organization (Maditinos, Chatzoudes, Tsairidis & Theriou, 2011); Lev, 2001; Sveiby, 1997b). Yousaff (2021) averts that human capital is the most valuable component of IC which helps the company in enhancing its market performance (value). As a result this, it is important that company value, measure and disclose it in order to provide adequate and complete information on this asset to increase it worth.

Performance of a company can be measured from both financial (ROI, ROA; Profits), market value (turnovers, market price), and shareholder return (ROE) and non-financial (customer satisfaction and service delivery) (Yahaya, Salman, Abdulsalam & Adegbayibi, 2022; Divinney, Richard, Yip & Johnson, 2008). Market value is a reflection of company's ability which comes from market price (Margono & Gantino, 2021). Sustainability and profitability are other dimensions of measuring firm's performance (Desai & Raval, 2022). Profitability is the ability of firm to make profit from all of its resources (intellectual capital/ resources and physical resources (Odhong, Were & Omolo, 2014). In other view Harward and Upton (2012), opined that it is also measured by company's management efficiency. Suharman, Hapsari, Hidayah, and Saraswati, (2023) examined 69 Indonesian State-Owned Enterprises using primary data source found positive relationship among intellectual capital, value chain and financial performance of the sampled companies. Other previous studies with empirical evidence of positive relationship between HCE and ROA include: Salman (2022); Acuna-Opazo & Gonzalez (2021); Alfiero, Brescia, and Bert (2021); Ousama, Hammami and Abdulkarim (2020); Soewarno and Tjahjadi (2020); Momani and Nour (2019); Komala and Fuad (2017). On the other hand, the study of Buallay (2017) discovered no significant relationship between HCE and ROA. Maditinos et al. (2011); Chang and Hsieh (2011) observed significant but negative impact of HCE on ATO while Scafarto, Ricci and Scafrato (2016)

empirically evidenced that HCE moderates the impact of innovative capital and performance of companies examined. The findings as shown above is inconclusive hence, we hypothesized that:

H1: Human capital efficiency (SCE) will positively influence market value (MV) Ceteris Paribus.

Structural Capital and Market Value

Structural capital efficiency (SCE): This capital which include the routines, procedures, patents, intellectual property, trademark, copyright, research and development (R&D) and other infrastructural facilities used by workers to add value (Bontis, 1998; Gates & Langevin, 2018; Yousaff, 2021). Nadeem, Dumay and Massaro (2018), submits that SCE is the rare resource that is unique. All companies have their own production design, operating system, organizational culture and management philosophy that vary from other companies. If this unique capital of a company is ignored, company's value/market price of such company will decrease in the global market. According to Razafindrambinina and Anggreni (2011), this capital influence firms' performance significantly. Renaldo, Suyono, Andi, Putri and Cecilia (2023) investigated the effect of business intelligence, intellectual capital, and financial performance on firm value of 420 manufacturing companies and the results showed positive and significant effect between intellectual capital and financial performance. Cabrilo and Dahms (2018) explored the relationship between IC and market performance of 101 Serbian firms with moderation effect of firm innovation. Data collected were analysed with structural equation model (SEM). The findings showed that SCE and RC have direct association with innovation performance. On contrary, Chowdhury, Rana and Azim (2019), Buallay (2017) and Ousama and Fatima (2015) observed that SCE has no significant effect on ROA. However, this study makes used of market value of company performance as it represents the market price/share of a company in the global market. With the above submissions, the findings are inconsistent, we therefore hypothesized that:

H2: Structural capital efficiency (SCE) will positively influence market value (MV) Ceteris Paribus.

Capital Employed and Market Value

Capital employed is another component of VAIC and this component is used to measure the physical (tangible) asset employed to generate profit (Chowdhury et al., 2019). Capital employed supports company intellectual capital to create value in the organization. This capital includes plants and machineries, buildings, fittings and furniture, motor van and other physical assets employed to generate revenue. In this way, efficient capital employed can improve market value of company. Hence, CEE refers to all essential physical capital and financial funds. Ali, Hussin, Flayyih, Haddad, Al-Ramahi, Almubaydeen and Hasan Abunaila (2023) investigated relationship between intellectual capital and innovation performance and the finding revealed correlation between intellectual capital components and innovation. Other previous studies that finding positive relationship between intellectual capital and companies' performance includes: Salman, Abdulsalam & Adegbayibi (2022), Alfiero, Brescia, and Bert (2021), Oner, Aybers, Cinko and Avei (2021), and Ousama and Fatima (2015) investigated that CEE has a positive effect on firm performance measured by ROA and ROE. On the other hand, Ousama et al. (2020), Ali, Murtaza, Hedvicakova, Jiang and Naeem (2021), Bayraktaroglu et al. (2019), and Buallay (2017) studies revealed that there is no significant effect of CEE on ROA of the firms. In view of the above discussion about the relationship between CEE and the company's performance, the study hypothesized that:

H3: Capital employed efficiency (CEE) will positively influence market value (MV) Ceteris Paribus.

Theoretical Framework

This study is underpinned by resource-based theory. Resource-based theory was propounded by Wernerfelt (1984). A resource is production means (be it intellectual capital resource or physical resource) that is available to a company to generate revenue/profit (Yahaya et al., 2022). Company's resources give a company competitive advantage over its competitor if well nurtured and sustained (Salman, 2022; Barney, 1991). Company develops a strategy that is difficult to imitate that has no immediate substitute (Yahaya, et al., 2022; Barney, 1991).

To achieve this, this resource must not be interchangeable with those of its competitors, and must be protected by all means (Barney, 1991; Lev, 2001). Hence, capability and internal resources of companies deemed to be the basis for strategies development for value creation (Salman, 2022; Barney, 1991). This theory implies that organizations/companies will succeed by nurturing and sustaining its' resource (Oner, Aybers, Cinko & Avei, 2021; Alfiero, Brescia & Bert, 2021; Ousama et. al., 2020). This theory opines that intellectual capital is strategic asset because it links IC with company's performance (Riahi-Belkani, 2003). Thus, this study employed this theory in emphasising the efficiency and value created of intellectual capital.

The research methodology and the course of research process

Model Specification

This study examines the nexus between intellectual capital efficiency and the market value of listed companies in Nigeria. Pulic (2004) VAIC's model was adopted to evaluate the IC efficiencies. The model was presented as follows:

$VAIC^{TM} = CEE + HCE + SCE.$

$$VAIC^{TM} = CEE + HCE + SCE \quad (1)$$

Where:
HCE = Human capital efficiency
SCE = Structural capital efficiency
CEE = Capital employed efficiency

$$HCE = VA/HC \quad (2)$$

Where:
VA = Value added, which represents the value added created by a company. The value of a company for this study is given below:

$VA = OI + E + D + A$

Where:
OI = Operating Income,
E = Employee costs,
D = Depreciation,
A = Amortization,
HC = human capital which is the total company investment on employee (salaries and wages, training and development cost, welfare package and compensation cost).

$$SCE = SC/VA \quad (3)$$

Where:
SC = structural capital of a company represented as VA-HC.

$$CEE = VA/CE \quad (4)$$

Where:
CE = Book value of total net tangible assets.
Regression model below was developed to test the study's hypotheses.

Model

$$Y_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 Size_{it} + \beta_5 LEV_{it} + \beta_6 Sec_{it} + V_{it} \quad (5)$$

Where:
Y_{it} = Company performance taken as market value (MV)
$X_1 = HCE_{it}$ (human capital efficiency)
$X_2 = SCE_{it}$ (structural capital efficiency)
$X_3 = CEE_{it}$ (capital employed efficiency)
$X_4 = SIZE_{it}$ (natural logarithm of total asset) control variable 1
$X_5 = LEV_{it}$ (debt ratio to asset employed) control variable 2
$X_6 = SEC_{it}$ (Total IC assets) control variable 3

Variables measurements

The dependent variable is the market value measured as share price multiple by number of outstanding shares.

Independent variables, VAIC which is Value Added Intellectual Coefficient = combination of human capital efficiency, structural capital efficiency and capital employed efficiency. Details of these variables are shown above under VAIC model specification.

Control variables used: size is measured as natural logarithm of total assets of the company, leverage (LEV) is the total debt divided by total assets of the company and sector (SEC) is proxy as total IC assets of the company.

Research methods

The data for the study were sourced from audited reports of all the sampled companies. Thus, this study is ex post facto research. This study investigated the effects of IC on market value for year 2019 period of observation of eight sectors. The population of the study is 231 and sample of the study is 117 companies (non-financial companies) listed on the Nigerian Exchange Group as at 31st December, 2019. The financial sector was not included because of its unique financial regulation that differs from other sectors. The eight sectors are: Agric/agro allied, Health, Downstream/marketing, Logistic services, ICT, conglomerate, food and beverages and construction and manufacturing. Therefore, they are representative of the entire public listed companies in Nigeria except financial institution which is not covered by this study.

Method of data analysis

This study employed descriptive and inferential statistics for analysis. Descriptive statistics was used to show the minimum, maximum, mean, and standard deviations; while regression analysis was employed as inferential statistics for hypotheses testing.

Data analysis, interpretation and discussion of findings

Our data were interpreted and discussed using both descriptive statistics and inferential statistics.

Descriptive statistics

The descriptive statistics are shown in table 1 to table 5 below. The statistics reports the minimum, maximum, mean, and standard deviations.

Table 1. Descriptive statistics (2018 and 2019)

Variables	2018				2019			
	Min	Max	Mean	SD	Min	Max	Mean	SD
HCE	2.43	2.87	8.95	5.38	1.00	7.40	1.45	0.96
SCE	0.57	0.96	0.84	0.10	0.00	0.86	0.25	0.16
CEE	0.20	0.21	0.05	0.04	0.05	1.18	0.21	0.18
SIZE	1.59	3.67	0.78	0.55	0.14	0.51	0.14	0.01
LEV	0.12	7.36	1.69	1.86	0.01	2.81	0.55	0.63
SEC	0.50	1.12	0.03	0.01	0.94	2.75	0.81	0.42
MV	5.68	9.36	1.21	3.14	3.38	4.05	1.01	2.13
n= 117								

S o u r c e : Authors' survey (2023).

N o t e : The figures are in billion Naira (Nigerian currency) ₦.

Table 2. Descriptive statistics (2020 and 2021)

Variables	2020				2021			
	Min	Max	Mean	SD	Min	Max	Mean	SD
HCE	0.20	5.23	2.91	2.55	4.00	28.23	10.19	1.59
SCE	0.08	3.31	0.88	0.56	4.52	29.35	5.87	1.31
CEE	0.02	6.74	1.06	1.04	4.07	31.03	7.33	1.67
SIZE	4.00	6.89	5.39	0.75	3.69	16.11	13.10	1.10
LEV	0.05	7.59	1.24	1.12	0.01	5.79	1.37	1.47
SEC	2.23	6.33	6.75	4.91	4.34	33.42	9.80	1.63
MV	3.20	4.50	3.69	4.85	4.57	28.62	4.62	1.57
n= 117								

S o u r c e : Authors' survey (2023).

N o t e : The figures are in billion Naira (Nigerian currency) ₦.

Table 3. Descriptive statistics (2022)

Variables	2022			
	Min	Max	Mean	SD
HCE	2.00	16.42	5.55	1.34
SCE	3.16	14.86	3.43	1.60
CEE	2.05	15.18	4.01	0.89
SIZE	1.15	9.02	6.63	0.31
LEV	0.03	2.81	0.75	0.01
SEC	2.86	16.07	5.43	0.22
MV	2.27	14.05	2.14	1.04
n= 117				

S o u r c e : Authors' survey (2023).

N o t e : The figures are in billion Naira (Nigerian currency) ₦.

Table 1-3 above showing mean, minimum and maximum values of both independent variables (HCE, SCE, CEE), control variables (SIZE, LEV, SEC) and dependent variable (MV) ranging from minimum of 0.02 to maximum of 33.42. These figures represent value created by intellectual capital efficiencies of the sampled companies for the periods of observation. Impliedly, this result shows that intellectual capital components and capital employed are efficient in adding value to sampled companies.

Regression Result

Table 4 presents the result of the regression showing the relationship between the variables (independent and dependent). From the regression result Durbin Watson test was showing 1.989, 2.058, 1.989, 1.900 and 1.719 confirming absence of non-autocorrelation among the variables.

Table 4. Regression results

Variables	Year 1	T	Year 2	T	Year 3	T	Year 4	T	Year 5	T
Constant	-2.651	-0.56	-2.476	-1.36	1.648	1.45	2.167	3.39	18.801	5.68
HCE	0.376	1.96	0.167	1.97	-0.013	-0.21	-0.095	-2.73	-0.003	-0.02
SCE	-4.391	-1.77	-0.220	-2.50	-0.569	-2.17	0.086	0.58	5.855	-3.64
CEE	1.510	5.17	0.041	0.63	1.372	8.96	0.549	6.36	0.411	1.09
SIZE	0.100	0.31	0.019	0.01	0.020	0.23	0.001	1.05	0.003	1.32
LEV	0.013	0.27	0.026	0.34	0.006	0.00	0.003	0.07	0.005	0.03
SEC	0.269	2.50	0.243	2.54	0.212	3.52	0.330	2.65	0.317	3.42
Sig	0.023**		0.016*		0.149		0.001**		0.000***	
R^2	0.469%		0.575%		0.469%		0.568%		0.665%	
Durbin Watson	1.989		2.058		1.989		1.900		1.719	
F	5.473		17.422		5.473		4.187		24.382	
n = 117										

* p < 0.05

Source: Authors' 2023.

Note: Year 1 to 5 represents 2018, 2019, 2020, 2021 and 2022.

This study hypothesized that HCE will positively influence market value of sampled companies and was confirmed by coefficient (1.96) and p-value (0.041), (0.167) and p-value (0.016), less than the 5%, significance level, which means that a 1% increase in the human capital efficiency will result in 36.7 and 16.7% increase in market value of the selected 117 firms for 2018 and 2019 years of assessment. But in 2021 and 2022 represented by model 4 and 5, HCE has negative influence on market value with coefficients and p-values of -0.095 and p-value 0.001, -0.003 and p-value 0.000 less than the 1%, significance level, which means that a 1% increase in the human capital efficiency will result in 9.5%, and 0.03%, decrease in market value of the selected 117 for that periods. In 2020, HCE does not influence market value of the selected firms this may be as a result of COVID 2019 experienced all over the world and Nigeria inclusive between 2019 and 2020.

The results of this research supported all the hypotheses. These results show significant and positive association between human capital efficiency and market value of the sampled companies. The finding is similar to that of Zhang, Duc, Mutuc & Tsai (2021); Yousaf (2021); and Ali et al. (2022); Tran and Vo (2018); Maji and Goswami (2019); Oner et. al. (2020); Buallay (2017); which also revealed positive and significant relationship results, but contradicts the findings of Dzenopoljac (2016); Chowdhury et al. (2019); and Momani and Nour (2019) in which the findings showed no association between HCE and performance.

The study also hypothesized that SCE will positively influence market value of the sampled companies, but on the contrary, SCE has negative but significant, with coefficient (-0.220) and p-value (0.016), (-4.39) and p-value (0.041) less than the 5% significance level, which means -22% and -4.4% increase in the market value of 117 selected Nigerian companies will be made if there is 1% decrease in structural capital efficiency. However, SCE positively influenced market value of the sampled companies in 2021 and 2022 with coefficients 0.086 and 5.855, p-values of 0.001, and 0.000 respectively, less than the 1% significance level. But in 2020 the result shows no influence at all. Finding also revealed that structural capital efficiency has an inverse relationship with market value. This finding is not in line with Ousama and Fatima (2015); Maji and Goswami (2019); whose findings showed positive and significant impact on company performance, but the result is in line with findings of Cabrilo and Dahms (2018); Pol et al (2018). However, studies like Chowdhury et al. (2019);

Maji and Goswami (2019); Dzenopoljac (2016); Nassar (2018); Buallay (2017); Razafindrambinia and Anggreni (2011) found no relationship.

Comparing this study's result with neighboring country, Nigerian sampled firms are during better in recognizing intellectual capital as part of their resources as these resource (Intellectual capital) confirmed that intellectual capital has positive and significant influence on firm's performance. However, Firer and Williams (2003) found negative relationship between intellectual capital (HCE and SCE) and firm performance in the sampled companies in South Africa.

The last hypothesis was that CEE will positively influence market value of the sampled companies. This is achieved and confirmed by the coefficient of (1.510), p-value (0.023), (0.041) and p-value (0.016), 0.549, p-value (0.001), 0.411, p-value (0.000) which is less than the 5% significance level. Impliedly, a 1% increase in the capital employed efficiency will result in 15%, 4.1%, 5.49% and 41% increase in market value of selected 117 firms for that period. In comparing this study with neigboring country, this study finding is consistent with Firer and Williams (2003) that only found capital employed influencing South Africa sampled companies' performance.

In addition, the three control variables were significantly related to market value as shown by their coefficients. The result further demonstrated significant and positive association between capital employed and market value of sampled companies. This result is consistent with the findings of Nassar (2018); Cabrilo and Dahms (2018); Dzenopoljac (2016); Ousama and Fatima (2015) and Maji and Goswami (2019); Yousaf (2021) but no similar to the findings of Razafindrambinia and Anggreni (2011) and Buallay (2017).

Conclusion, recommendation and suggestions for future research

Conclusion

Based on the findings, the study concluded that intellectual capital efficiency has significant influence on market value of the Nigerian sampled companies. This study provides evidence that market values of the sampled companies are influenced by their intellectual capital efficiencies for the year of observation. Specifically, findings showed that human capital efficiency is related to companies' market values of the sampled companies.

This study also finds evidence to support the predicting power of structural capital efficiency (SCE) in enhancing company performance. The result showed that SCE has negative significant association with MV. Conclusively, the study revealed that the higher the companies' investment in structural capital the lesser the return. The study further showed that capital employed efficiency positively and significantly relates with MV for the period studied. Consequently, the study emphasized that both intellectual capital assets and physical assets have potential power to influence companies' performance as they can adequately create value for the sampled companies.

The study is limited to intellectual capital and market value of 117 companies listed on Nigerian Stock Exchange as at 31st December, 2018, 2019, 2020, 2021 and 2022 excluding the Nigerian financial institution (banks and insurance companies) as at that date.

Recommendations

Therefore, this study recommends the followings based on the study's findings:

- Human capital (HCE) components should be treated as strategic assets hence, should be properly managed and nurtured by the sampled companies in order to continue to create value. Therefore, in order to improve human capital efficiency, the companies sampled should spend more in the training and re-training of their staff and give more priority to their welfare. Such training can include organising seminars, workshops and other events that can improve their capability which will in turn boost the companies' productivity.
- Capital employed (CEE) should be improved upon by the sampled companies by spending/investing more on their physical asset such as plants and machineries, equipment and other fixed assets by buying more efficient and new technological improved fixed assets.

Future Research

This study only focused on 117 quoted non-financial companies; hence, the finding cannot be generalized. Future study can dwell on financial companies and cover more than one accounting year to examine more trend of value added power of intellectual capital efficiency.

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