



Intellectual Capital And Organizational Productivity In Manufacturing Firms In Anambra State, Nigeria

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ABSTRACT

This work investigated the effect of intellectual capital on organizational productivity in selected manufacturing firms in South-East, Nigeria. This study aims to determine the effect of human capital, structural capital and customer capital on organizational productivity. Relevant conceptual and empirical literature was reviewed. The study was anchored on Human Capital Theory. Descriptive research survey was adopted. This study made use of primary data, and the instrument employed for data collection was questionnaire. The population of the study one thousand two hundred (1200). The statistical formula devised by Borg and Gall (1973) was employed to determine the sample size of two hundred and four (300). The study used face and content validity. Four hypotheses were formulated and tested. Multiple regression analysis were employed to analyze the data generated. The study discovered that human capital had a strong positive significant effect on organizational productivity in the manufacturing firms. Structural Capital had a strong significant positive influence on organizational productivity in selected manufacturing firms. The study concluded that intellectual capital had a strong positive significant effect on organizational productivity in manufacturing firms in South-East Nigeria. The study recommended that manufacturing firms should establish which aspects of their employee training programmes actually enhance productivity and which are misdirected and worthless. Management of manufacturing firms should identify the expertise, capabilities, brands, intellectual properties, processes and structural capital assets in order to increase management's ability to leverage the company's intellectual assets. Management should improve the efficiency and productivity of its workforce by constantly reviewing their performances and engaging in regular training and development programmes using Innovation capital.

Keywords: Human Capital, Structural Capital, Innovation Capital and Organizational Productivity

INTRODUCTION

In this millennium, less people will do physical work and more people will do brain work. This is called intellectual capital. It does not appear on the company balance sheet but it has more value for organizations than physical assets. Economic wealth is driven more by knowledge and information than the production process (Roos, Pike and Fernstrom 2015). Intellectual capital is also known as the new invisible asset and the most widely used definition of intellectual capital is "knowledge that is of value to an organization. This concept of intellectual capital is also gaining importance in the service industry, amongst which are banks, insurance companies and high technology-based companies. People from different industries, companies and backgrounds agree that the time to focus on intellectual capital and related issues has come (Chen and Lin 2004). The main goal for any business is simple: Invest capital so

that it maximizes shareholder value. However, in modern times, this is a necessary but not sufficient condition because execution of successful strategies depends on access to human and operational know-how, customer and supplier relationships, a committed workforce, and other such intangibles. At the heart of making these intangibles come alive is the firm's investment in intellectual capital. As Carnegie (2009) puts it, "The only irreplaceable capital an organization possesses is the knowledge and ability of its people. The productivity of that capital depends on how effectively people share their competence with those who can use it". It is logical therefore that competitive age in the 21st century has shifted from process and technology to quality of intellectual capital.

Unseen Wealth (2010) asserts that industries with the most highly educated workforce enjoy above average productivity and profitability. No wonder that the issue of intellectual capital investment has continued to be important, and how to maintain or enhance its value a topical issue. In Nigeria, banks are reputed as one of the fastest growing sector in the financial service industry in the country. They have also earned themselves the reputation of the sector with the highest yearly recruitment in the industry if not in the economy at large and also have a good compensation package for its employees. The sector has graduated from semiskilled labour driven, to a more professional and skilled workforce, where people who are highly educated and skilled are considered most appropriate for the sector. While banks have traditionally emphasized shrewd use of financial assets, the increasingly competitive global marketplace is causing financial institutions to take a fresh look at the way they manage intellectual capital. The goal is to attract, develop, and retain valued people while ensuring efficient use of human capital. Therefore, the study seeks to ascertain the effect of intellectual capital on the performance of manufacturing firms in Anambra State.

Statement of the Problem

The significance of intellectual capital in the understanding based economy; little research attention has been dedicated to understanding the link between intellectual capital and organizational productivity in Nigeria. The problem that confronts businesses, users of accounting information, standard setters and regulators is how to best understand and communicate the difference between the value of a company, usually expressed as market prices of their shares and the accounting book value of that company (Pourkiani, Sheikhy and Daroneh 2014). It is possible to simply attribute the entire difference to some ill-defined notion of intangibles. The rise of the new economy is mainly driven by evidence and knowledge and it is credited to the increased fame of intellectual capital. Intellectual capital is therefore the key construct in explaining this difference. Bontis and Fitz-enz (2002) classified intellectual capital into four elements human capital, customer capital, innovation capital, and process capital. Each element directly influence performance and productivity, and moreover, there have direct effect on human capital and other elements of intellectual capital (Bontis and Fitz-enz, 2002). That is, human capital, the most fundamental intellectual capital element, that affect other the three elements and then these three elements, in turn, affect productivity. According to Bontis, Keow and Richardson (2010), there are three main components of intellectual capital which affect firm's productivity and performances are human capital, structural capital and customer capital. When companies invest in physical capital; they try to select alternatives offering the highest return on their investment. They would also like to invest in intellectual capital offering them the highest return. Outdated office methods, which are based on tangible assets and historical, business based information are inadequate for valuing intellectual capital of which human capital is one. It has become therefore imperative for firms to development methods of valuing their intellectual capital and firm value, if it would continue to be relevant in the ever competitive knowledge-based economy. Therefore, this study intended to investigate the effect of intellectual capital on the organizational productivity in Manufacturing firms Anambra State.

Objectives of the Study

The main objective of the study is to examine the effect of intellectual capital on performance of Nigerian banks, while specific objectives are:

1. To assess the influence of human capital on organizational productivity in Nigerian

2. To determine the effect of structural capital on organizational productivity in Nigerian
3. To investigate the effect of innovation capital on organizational productivity in Nigerian.

Research Questions

1. To what extent does human capital influence organization productivity in Nigerian?
2. To what extent does structural capital organization productivity in Nigerian?
3. To what extent does innovation capital affect organizational productivity in Nigerian?

Hypotheses

H₀₁: Human capital has no significant influence on organizational productivity in Nigerian

H₀₂: Structural capital has no effect on organizational Productivity in Nigeria

H₀₃: Innovation capital has no significant effect on organizational productivity in Nigerian

REVIEW OF RELATED LITERATURE

Conceptual Framework

Intellectual Capital

Various studies have made attempt at providing one acceptable definition for intellectual capital but have not yet succeeded and as such there is no generally agreed definition of intellectual capital (Engstrom 2003). However, some definitions are noted here: Stewart (1997) defines Intellectual Capital as packaged useful knowledge, while Fredriksen (1998), states that intellectual capital can be defined as skills and knowledge acquired by people during their lifetime and which can be used for the production of goods and services. Intellectual Capital (IC) can be briefly defined as the knowledge based equity of organizations and has attracted, during the last decade, a significant amount of practical interest (Campisi and Costa, 2018). Although the importance of Intellectual Capital (IC) is constantly increasing, many organizations face problems with its management, mostly due to measurement difficulties (Andrikopoulos, 2015; Kim et al. 2009). The widespread acceptance of Intellectual Capital (IC) as a source of competitive advantage led to the development of appropriate methods of its measurement, since traditional financial tools are not able to capture all of its aspects (Campisi and Costa, 2018; Nazari and Herremans, 2017). Edvinsson and Malone (1997) define intellectual capital as ‘the possession of knowledge, applied experience, organizational technology, customer relations and professional skills that provide a company with a competitive edge in the market’. Ahangar (2011) sees the term intellectual capital to include inventions, ideas, general knowledge, design approaches, computer programs and publications. Ismail and Kareem (2011), defines intellectual capital as the combined intangible assets which enable the company to function and see an enterprise as the sum of its tangible assets and intangible assets as expressed in the following formula: Enterprise = Tangible Assets + Intellectual Capital. Saint-Onge’s, (2016) model developed in the early 1990s divides intellectual capital into three parts: Human capital, Structural capital; and Customer capital. Edvinsson (1997) agrees that intellectual capital comprises human capital, structural capital and customer capital. Bontis (2010) adjusts customer capital into relational capital arguing that it not only the customer’s contribution that affects intellectual capital but the whole lot of relations with customers, suppliers, shareholders and other partners. Tseng and Goo (2015) categorized intellectual capital (IC) framework in term of human capital, organizational capital, innovation capital and relationship capital.

Intellectual capital is proprietary knowledge and skill, experience and the relevant workplace competencies of managers and technical innovators (Weijie & Zhao 2011). Intellectual capital as the total value of personal physical strength, intelligence, and knowledge and skills for utilization. The total output is the sum of labour abilities of a particular population (Wang, Xu and Zhao 2015). There exist a strong belief and support for the third view, namely, that intellectual capital is the labour ability of any person. Thus, intellectual capital is not limited only to managers or technical personnel. More specifically, intellectual capital is the ‘output’ formed by the investment, the form is intangible, and its value is not what has been invested, but the worth of ‘output’. As noted by Stacey (2011), intellectual capital can be divided into two main categories, defined as human capital and invisible assets, or ‘non thinking’ capital.

Organizational Productivity

Productivity is a crucial concern for business organizations, because it may be the most important driver for achieving satisfactory results and significant cost-advantage over competitors. The term productivity was applied for the first time by François Quesnay, the mathematician and economist who was an adherent of physiocracy school. He believe authority of any government is relied on increasing of productivity in the agriculture sector by proposing the economic table. Another French man in 1883 called Littere defined productivity as knowledge and technology of production. Fredrick Venislo, Taylor and Frank and Lillian Gilbert conducted studies about labor division, improving the methods and determining the standard time in order to enhance efficiency simultaneous with the beginning of scientific management movement period at the beginning of 1900 (Darvish, 2018).

Productivity is maximization of utilizing the resources, human force and schemes scientifically to decrease expenses and increase employees, managers and consumers' satisfaction. Other definitions consider human force productivity as appropriate maximized utilization of human force towards goals of the organization with the lowest time and minimum expense. According to the National Productivity Organization in Iran, productivity is an intellectual attitude towards work and life. This is similar to a culture that its purpose is to make activities more intelligent for a better and excellent life. Productivity is achieving maximum possible profit from the labor force, power, talent and human force skill, land, machine, money, equipments of time, place, etc to enhance welfare of the society so that increasing of it is considered by the clear-sighted in politics, management and economy as a necessity towards enhancement of humans' living standard and society (Darvish, 2018).

Mathis and Jackson (2010) defined productivity as a measure of the quantity and quality of work done considering the cost of the resource it took to do the work. Steers (1991) is of the opinion that it is useful from a managerial standpoint to consider several forms of counter-productive behavior that are known to result from prolonged stress. Productivity refers to the real output per unit of labor. It is a powerful driver of international capital flows. Productivity levels seem to be the highest in United States as compared to the euro area, because of higher employment rates in U.S. (Skoczylas & Tissot, 2015). Meneze (2016) defined productivity as the employee's ability to produce work or goods and services according to the expected standards set by the employers, or beyond the expected standards. Productivity is calculated by comparing total amount of output to the total amount of input used to produce this output (Bojke et al., 2012).

Productivity is defined by Amah (2016) as the measure of how efficiently and effectively resources (inputs) are brought together and utilized for the production of goods and services (out puts) of the quality needed by society in the long term. This implies that productivity is a combination of performance and economic use of resources. High productivity indicates that resources are efficiently and effectively utilized and waste is minimized in the organization. Productivity balances the efforts between different economic, social, technical and environmental objectives (Amah, 2016). High productivity provides more profit for investors and promotes the development of the enterprise. Productivity measurement indicates areas for possible improvements and shows how well improvement efforts are faring. It helps in the analysis of efficiency and effectiveness. It can stimulate improvement and motivate employees (Prokopenko, 1987). Chase and Aquilano (1995) noted that productivity is measured in terms of outputs per labour hour. However this measurement does not ensure that the firm will make money (for example when extra output is not sold but accumulates as inventory). To test whether productivity has increased, the following questions should be asked: "Has the action taken increased output or has it decreased inventory?" "Has the action taken decreased operational expense?" This would then lead to a new definition which is: Productivity is all the actions that bring a company closer to its goals.

Theoretical Framework

This research work is anchored on Human Capital Theory (Sweetland, 1996)

Human Capital Theory

This theory emphasizes the value added that people contribute to an organization. It regards people as assets and stresses that investments by organizations in people will generate worthwhile returns. The theory suggests that investment in people results in economic benefits for individuals and society as a whole (Sweetland 1996). The investment in individual can be made in terms of education, health, nutrition, and any other development that results in long-term benefits. It is important to clarify that the investor in this particular case is an individual who decides whether to invest his or her time, money and other resources into some activity that will benefit his or her human capital. Many researchers have been conducted in the area of human capital however; there is still the existence of a wide gap between theory and practice. The shift towards value-addition based measurements of investment in intellectual capital has gradually begun to close the gap between theory and practice. Value Added Intellectual Coefficient (VAICTM) developed by Pulic (1997) is found most appropriate for the study of intellectual capital and performance. It meets the basic requirements of contemporary economy indicating the real value and performance of a company; this is because value added has been reputed as the preferred measure of the wealth created by activities of a company. Pulic (1997) sees investment in intellectual capital as the sum total of all expenditures incurred on the employees during the period, that is, the salaries and allowances. He also used Intellectual Capital Efficiency to assess the efficiency achieved the company from the investment in intellectual capital. Intellectual Capital Efficiency coefficient (ICE), is said to be measure by dividing Value Added by investment in intellectual capital.

This model meets the demand for giving employees the status of key resource by treating them as investment and not as cost; this because they invest their knowledge and skills which is valued by the market through the company's activities and reflected in the created value added. The model has received wide usage in the area of intellectual capital valuation especially with intellectual capital due to the inadequacies of the other valuation methods and measurement models. VAICTM provides a standardized and consistent basis of measure that can be used for easily comparison both within sector, industry or internationally. It is also important to state that all the data used is based on audited information from financial reports, therefore results can be said to be objective and verifiable. Also, like other traditional measures of corporate performance, it is easy and straightforward for both internal and external users of the financial statement. VAICTM have been used in various study notable among them are; a study conducted on intellectual capital and organizational productivity of Austrian banks by (Pulic and Bornemann, 1999) and similar study conducted on Croatian manufacturing sector by (Pulic, 2011). Mavridis (2004) used the same model to study the performance of Japanese banks. Other researches that have utilized VAICTM includes; Bharathi (2010) conducted study on the intellectual capital performance of manufacturing sector in Pakistan using VAICTM and found that manufacturing sector out performs banks sector on intellectual efficiency which he said is attributed to efficient usage and management of intellectual capital. Mohammed and Ismail (2009) using VAICTM to test the intellectual capital efficiency and firm's performance in Malaysian financial sectors, they found out that there is a significant and positive relationship between intellectual capital and company's performance.

Empirical Review

Abdel-Aziz, Abdul-Naser and Shamaric (2013) examined the impact of intellectual capital on Jordanian Telecommunication Companies' (JTC) Business Performance (BP). The study surveyed the managers at JTC companies. Practical data were used in the empirical analysis collected from 84 managers out of about 500 managers, by means of a questionnaire. Statistical techniques such as descriptive statistics, t-test, ANOVA test, correlation and multiple regressions were employed. To confirm the suitability of data collection instrument, a Kolmogorov-Smirnov (K-S) test, Cronbach's Alpha and factor analysis were used. The results showed a positive significant effect of IC on JTCs' BP. The results also indicated that

RC is positively and significantly affect JTCs' BP, while SC and RC do not significantly affect JTCs' BP. The Empirical results also indicated that there are strong inter-relationships and interactions among the three components of IC.

Chidiebere (2012) examined the relationship between intellectual capital and financial performance in the Nigeria banking sector. The study adopted the ex-post facto research design. It was systematically conducted using longitudinal time series data generated from the Nigeria Stock Exchange and from annual reports and accounts of the selected banks in Nigeria spanning from year 2010 to 2011. The dependent variables were: Return on Assets, Return on Equity, Employee Productivity, Growth in Revenue, Market to book value ratio; while the independent variables were the components of Value Added Intellectual Capital Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and the Capital Employed Efficiency (CEE). The multiple regression analysis method was adopted for the test of all the hypotheses. The SPSS statistical software (version 17.0) was used for the data analysis. There was a positive significant relationship between components of VAIC and the Return on Assets of the banks in Nigeria (VIAC coefficient). There was also a positive significant relationship between components of VAIC and the Return on Equity of the banks in Nigeria (VIAC coefficient). The study further showed that there was a positive significant relationship between components of VAIC and employee productivity of the banks in Nigeria (VIAC coefficient). The results also showed that there was no positive significant relationship between components of VAIC and the growth in revenue of the banks in Nigeria (VIAC coefficient). There was a positive relationship between the components of VAIC and market to book value ratio of the banks in Nigeria (VIAC coefficient). From the results stated above, it is thus established that indeed there is positive significant relationship between intellectual capital and financial performance of banks in Nigeria.

Moradi, Saeedi, Hajizadeh and Mohammadi (2013) examined the influence of intellectual capital on the improvement of listed companies' financial performance on Tehran stock exchange. Chosen companies in this article were active in two fields of automotive manufacturing industry and needed instruments, and drug manufacturing industry and needed raw materials in a four-year-period from 2017 to 2010. Two models were utilized for intellectual capital measurement which are VIC model (value of IC) and Pulic model. The current research indicates that there is positive significant association between each component of intellectual capital which is consisting of physical, human and structural capital and various indexes of financial performance. Moreover, there is a positive significant relationship between intellectual capital value and indexes of financial performance in the chosen companies

Ogbo, Ezeobi and Ituma (2013) examined the impact of intellectual capital on organizational performance: evidence from Nigeria banking sector. The survey method was adopted. From a population of 7,000 workers in the commercial banks in South Eastern States of Nigeria, a sample size of 378 workers was obtained using Taro Yamane Formula. The intellectual capital questionnaire developed by Bontis (1997) was re-administered to bankers in the South Eastern States of Nigeria. The statistical tool used in testing the hypotheses is the Chi-Square statistical test which is helpful in cause and effect situation or to show the relationship between events. Findings indicated a notable similar pattern of intellectual capital –organizational performance link as found in Western countries of North America and Europe. Findings specifically show that human capital and structural capital have a positive and significant effect on organizational outcomes in the Nigerian banking sector. Implication for future research and management practice are considered in the conclusion.

Emadzadeh, Nadia, Asiya, Mahboobe, Fatemeh and Mojgan (2013) examined the effect of Intellectual Capital on Firm Performance. Variables were based on data collected and the study adopted descriptive research design. To calculate the performance of the corporate, balanced scorecard approach was used. A total of 89 questionnaires were distributed among the employees and operation administrators of 4 factories. SPSS18 and Amos 20 were used for data analysis. The results showed that intellectual capital have positive and significant impact on financial performance, customer, business processes, and learning and growth.

Mbugua and Rotich (2014) examined the effects of intellectual capital on profitability of listed Kenyan commercial banks. The study focused on four variables; human capital, structural capital, relational capital and innovation capital. Descriptive research design was used to test how independent variables influenced listed banks profitability. The target population was ten commercial banks that were listed in Nairobi Securities Exchange by 2012. The study used secondary data sources from published audited accounts for last 5 years from 2009-2013 in gathering data for analysis. Descriptive statistical tool MS-Excel and SPSS was used to analyze data. The study found that structural capital and innovation capital affects listed commercial banks of Kenya profitability. The study recommends that Kenyan listed banks to continue with strong control over structural and innovation capital, more allocations for intellectual capital investment be made to the two elements of intellectual capital for more growth in profitability. In addition, Kenyan listed banks to be more focused in making managerial decisions in the areas of its relational and human capital reforms and their utilization to enhance efficiency of generating profit for banks.

Samiloglu (2016) examined the relationship between value added intellectual coefficient (VAIC) and the ratio of market value to book value in the Turkish banking sector. The study adopted VAIC method. The results of their study indicated that there is significant correlation between the dependent variable (ratio of market value to book value) and the independent variable (VAIC) and its three components. Firer and Williams (2003) used VAIC M to measure the relationship between intellectual capital and commercial performance of African firms; the results of their study indicated that there is no significant correlation between the three components of intellectual capital and three dependent variables (profitability, productivity, market value).

Ngari, Gichira, Aduda and Waititu (2013) examined the relationship between Intellectual Capital Accounting and Business Performance of Pharmaceutical Companies in Kenya. To do this study, the researchers formulated three hypothesis. With a target population of eighty-nine (89) local pharmaceutical manufacturing companies, a sample size of 31 companies qualified for the study as they were the only ones that has been licensed by Pharmacy and Poisons Board and this signifies a 35% of total population. Data were collected through a 5-Scale Likert structured questionnaire administered to 31 pharmaceutical companies. The Multi-regression analysis tool, Analysis of Variance (ANOVA) and Pearson Bi-variate correlation coefficient were used to test the hypotheses. The result shows that intellectual capital accounting has positive relationship with business performance; however, human capital was the most prominent of intellectual accounting.

Boujelbenen and Affes (2013) examined the impact of intellectual capital disclosure on the cost of equity capital: A case of French Firms. The study which is an empirical research was based on companies listed in the French SBF 120 Stock Market Index adopted descriptive statistics method. Two main hypothesis and three sub-hypothesis were formulated to guide the study. Annual reports for the year 2009 of French companies in the SBF 120 French Index: these are companies that have the most significant stock exchange capitalization, while elimination was done for foreign companies. The product got the sample size to 102 French companies. Data relating to the Intellectual capital disclosure data were collected from the annual reports (reference documents) of 2009 of the companies found on the SBF 120 index for the year 2009. The study depicts support the hypothesis that stipulates the existence of a significant and negative association between intellectual capital disclosure with its two components (human capital and structural capital) and the cost of equity. However, the negative impact of the relational capital disclosure is not validated. The result therefore shows that managers of firms, the result show the benefits of enhanced IC disclosure regarding the reduction in their cost of capital.

METHODOLOGY

This study used a descriptive survey design. The purpose of descriptive survey design is to collect detailed and factual information that describes an existing phenomenon.

This study was undertaken within Anambra State, Nigeria. The population comprised 1,200 employee of selected manufacturing firms in Anambra State. The sample size consisted of 300 employees of the selected manufacturing firms. The researcher made use of primary and secondary sources of data. The major instrument used in this study work is the questionnaire.

Face and content validity was adopted while test-retest and Pearson’s product moment techniques was use in determine the reliability of instrument. The research questions were answered using simple percentage while the hypotheses were tested using simple regression analysis at 0.5 significant.

PRESENTATION AND ANALYSIS OF DATA

Data collected were presented and analysed. The results were presented in tables 1 - 3 in accordance with the hypotheses.

Research Question One: *To what extent does human capital influence organization productivity in manufacturing firms in Anambra State, Nigerian?*

Table 1: Summary of Simple Regression Analysis with Human Capital Influence Organization Productivity

	B	SE B	β
Constant	4.284	.109	
Human Capital	-.541	.042	-.558
R	.558		
R ²	.311		
Adj.R ²	.309		

Data in table 1 shows that the simple regression coefficient (R) is .558 while the coefficient of determination (R²) is .311. This is an indication that human capital explained 31.1% of the variance in organizational productivity of manufacturing firms in Anambra State. Using Muijs' criteria, Human capital can be said to moderately influence organizational productivity. The beta weight (β = -.558) shows that human capital has positive effect on academic organizational productivity, such that a unit increase in human capital leads to .558 increase in organizational productivity of manufacturing firms.

Research Question Two: *To what extent does structural capital affect organization productivity in Nigerian?*

Table 2: Summary of Simple Regression Analysis on Structural Capital Effect Organization Productivity

	B	SE B	β
Constant	4.822	.197	
Organization Productivity	-.719	.072	-.619
SC	R .619		
	R ² .384		
	Adj.R ² .380		
Constant	4.069	.129	
Organization Productivity	-.474	.051	-.536
SC	R .536		
	R ² .287		
	Adj.R ² .284		

Data in table 2 shows that the simple regression coefficient (R) for structural capital is .619 while the coefficient of determination (R^2) is .384. This is an indication that Structural Capital explained 38.4% of the variance in the organization productivity of manufacturing firms. Considering the size of the R^2 which is within 0.3-0.5, structural capital can be said to moderately effect organization productivity of manufacturing firms. The beta weight ($\beta = -.619$) shows that structural capital has negative effect on effect organization productivity of manufacturing firms, such that a unit increase in structural capital will likely lead to .619 decrease in effect organization productivity of manufacturing firms.

On the other hand, the regression coefficient (R) for organization productivity is .536 while the coefficient of determination (R^2) is .287. Considering the size of the R^2 which is within 0.1-0.3, premarital cohabitation can be said to modestly predict academic engagement of female students. The beta weight ($\beta = -.536$) shows that structural capital has negative effect on organization productivity in manufacturing, such that a unit increase in structural capital leads to .536 decrease in organization productivity in manufacturing firms.

Research Question Three: *To what extent does innovation capital affect organizational productivity in Nigerian?*

Table 3: Summary of Simple Regression Analysis with Innovation Capital Effect on Organizational Productivity in South -East

		B	SE B	B
IN	Constant	4.296	.134	
	Innovation Capital	-.540	.058	-.593
	R	.593		
	R^2	.352		
	Adj. R^2	.347		
IN	Constant	4.233	.193	
	Organizational productivity	-.527	.068	-.466
	R	.466		
	R^2	.217		
	Adj. R^2	.213		

As displayed in table 3, the simple regression coefficient (R) for innovation capital is .593 and the coefficient of determination (R^2) is .352. This shows that innovation capital explained 35.2% of the variance in the organizational productivity. The R^2 size which is within 0.3-0.5 indicates that innovation capital moderately predicts organizational productivity. The beta weight ($\beta = -.593$) suggests that innovation capital has negative effect on organizational productivity such that a unit increase in innovation capital will likely lead to .593 decrease in their organizational productivity.

The organizational productivity on the other hand had a regression coefficient (R) of .466 and a coefficient of determination (R^2) of .217. This shows that innovation capital explained 21.7% of the variance in the organizational productivity of the manufacturing firms. Considering the size of the R^2 which is within 0.1–0.3, innovation capital modestly affect organizational productivity of the manufacturing firms. The beta weight ($\beta = -.466$) suggests that innovation capital has negative effect on organizational productivity of the manufacturing firms such that a unit increase in innovation capital will likely lead to .466 decrease in their organizational productivity of the manufacturing firms. The size of the beta weights for manufacturing firms suggests that the effect of innovation capital on organizational productivity is stronger for manufacturing firms South East.

4.3 Test of Hypotheses

4.3.1 Hypothesis One:

Ho: Human capital has no significant influence on organizational productivity in Nigerian

Ho₁: Human capital has a significant influence on organizational productivity in Nigerian

Table 4: Test of Significance of Simple Regression Analysis with Human Capital Significant Influence on Organizational Productivity

	<i>B</i>	SE <i>B</i>	<i>B</i>	<i>P-value</i>
Constant	4.284	.109		0.00
Organizational Productivity	-.541	.042	-.558	0.00
R	.558			
R ²	.311			
Adj.R ²	.309			
<i>F</i>	168.840			0.00

As shown in table 4 above, the simple regression coefficient (R) is .558 while the R² is .311. The F-ratio associated with these is 168.840 and the *P-value* = .000, since *P-value* is less than the stipulated .05 level of significance, it was decided that Human capital has a significant influence on organizational productivity in Anambra State, Nigerian

Hypothesis Two:

Ho: Structural capital has no significance effect on organizational Productivity in in Anambra State,

Ho₁: Structural capital has a significance effect on organizational Productivity in in Anambra State,

Table 5: Test of Significance of Simple Regression Analysis of Structural Capital and organizational Productivity in Manufacturing Firms in Anambra State,

		<i>B</i>	SE <i>B</i>	<i>B</i>	<i>P-value</i>
SC	Constant	4.822	.197		.00
	Structural Capital	-.719	.072	-.619	.00
	R	.619			
	R ²	.384			
	Adj.R ²	.380			
	<i>F</i>	99.00			.00
SC	Constant	4.069	.129		.00
	Organizational Productivity	-.474	.051	-.536	.00
	R	.536			
	R ²	.287			
	Adj.R ²	.284			
	<i>F</i>	85.00			.00

The data in table 5 shows that the simple regression coefficient (R) for structural capital is .619 and .536 while the R² is .384 and .287 for structural capital. The F-ratio associated with these is 99.00 and 85.00 and the *P-value* = .000 and 0.00 for structural capital respectively. Since the *P-values* are less than the stipulated .05 level of significance, it was decided that Structural capital has a significance effect on organizational productivity in in Anambra State,

4.3.3Hypothesis Three:

Ho: Innovation capital has no significant effect on organizational productivity in manufacturing firms Anambra State, Nigerian

Ho₁: Innovation capital has a significant effect on organizational productivity in manufacturing firms Anambra State, Nigerian

Table 6: Test of Significance of Simple Regression Analysis on Innovation Capital Effect on Organizational Productivity in Manufacturing Firms Anambra State, Nigerian

	<i>B</i>	SE B	β	<i>P-value</i>
Constant	4.296	.134		.00
Innovation capital	-.540	.058	-.593	.00
R	.593			
R ²	.352			
Adj.R ²	.347			
<i>F</i>	85.647			.00
Constant	4.233	.193		.00
Organizational Productivity	-.527	.068	-.466	.00
R	.466			
R ²	.217			
Adj.R ²	.213			.00
<i>F</i>	59.244			.00

Table 6 shows that the simple regression coefficient (R) for innovation capital is .593 and .446 while the R² is .352 and .217. The F-ratio associated with these is 85.647 and 59.244 for innovation capital and the corresponding *P-value* = .000 for older innovation capital. Since the *P-values* are less than the stipulated 0.05 level of significance, it was concluded Innovation capital has a significant effect on organizational productivity in manufacturing firms Anambra State, Nigerian

Summary of Findings

The findings of the study are summarized as follows:

1. Human Capital has a strong significant effect on the on organizational productivity in manufacturing firms in Anambra State, Nigeria.
2. Structural Capital has a strong significant effect on the organizational productivity in manufacturing firms in Anambra State, Nigeria.
3. Innovation capital on has a strong significant effect on the organizational productivity in manufacturing firms in Anambra State, Nigeria.

CONCLUSION

This study investigated whether intellectual capital is a primary root of a company's value and whether intellectual capital is a primary business resource that can explain a company's performance. It was discovered that Human Capital has a strong significant effect on the organizational productivity, Structural Capital has a strong significant effect on the on organizational productivity in manufacturing firms and innovation capital has a strong significant effect on the organizational productivity in manufacturing firms in Anambra State, Nigeria. Therefor the study concluded that intellectual capital has a strong significant effect organizational productivity in manufacturing firms in Anambra State, Nigeria

RECOMMENDATIONS

The following recommendations would result in a movement towards a greater acknowledgment and incorporation of intellectual capital in manufacturing firms

1. Manufacturing firms should establish which aspects of their employee training programmes actually enhance productivity and which are misdirected and worthless.
2. Management of manufacturing firms should identify the expertise, capabilities, brands, intellectual properties, processes and structural capital assets in order to increase management's ability to leverage the company's intellectual assets.

3. Management should improve the efficiency and productivity of its workforce by constantly reviewing their performances and engaging in regular training and development programmes using Innovation capital.

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