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RESEARCH ARTICLE

Effect of Intellectual Capital on Performance of Selected Manufacturing Firms in Enugu Metropolis

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Abstract

The study was focused on effect of Intellectual Capital on performance of Selected Manufacturing firms in Enugu Metropolis. The Specific objectives of the study were to: determine the effect of human capital on organizational efficiency of selected Manufacturing firms in Enugu metropolis, ascertain the extent to which structural capital influence goal attainment of selected Manufacturing firms in Enugu metropolis and examine the relationship between social capital and employee welfare of selected Manufacturing firms in Enugu metropolis. The population of the study was (97) employees of the selected Manufacturing firms which were also used as the sample size, instruments for data collection were questionnaires and interview, out of 97 copies of questionnaire distributed 87 copies were properly filled/returned. Survey research design was adopted for the study. Hypotheses one and two were tested using simple linear regression tool while hypothesis three was tested using Pearson product moment correlation coefficient. The findings indicated that Human capital significantly affects organisational efficiency of the selected Manufacturing firms, Structural capital significantly influences goal attainment of the selected Manufacturing firms. There was a positive relationship between social capital and employee welfare of the selected Manufacturing firms. The study recommends among others that management of the firms studied should effectively manage their intellectual capital in order to achieve organizational and employee efficiency which will result to organizational goal attainment.

Keywords: Intellectual Capital; Performance; Human Capital; Structural Capital; Social Capital; Goal Attainment and Employee Welfare

Introduction

The development of intellectual capital can be traced back to the desire for individuals working with or within businesses to improve their understanding of what comprised the value of the business so as to manage better those things that generate value. (Sveiby, 1997; Edvinsson & Malone, 1997). The term intellectual capital was first introduced by John Kenneth Galbraith in 1969. Before that, Peter Drucker used the term knowledge worker instead of it. Yet there is no consensus on the definition of intellectual capital; accordingly, intellectual capital is processes and assets which are usually not reflected in the balance sheet (Min, 2012).

Intellectual capital (IC) is gaining importance in today's knowledge economy and plays a key role in innovation, productivity growth as well as the performance and competitiveness of organizations. The IC may include the following areas: human resources, organizational structure and processes, research and development, technology and rights related to intellectual property, consumer networks and software (Kamukama, Ahiauzu, and Ntayi, 2010). Intellectual capital (IC) is an important intangible asset in today's business, particularly in current knowledge intensive economy which also relies heavily on technology. IC has been frequently recognized as valuable intangible asset which is managed and utilized to stimulate innovativeness, creativity, competitive edge, value creation and boost corporate performance (Bontis, Chua, & Richardson, 2000).

Management of intellectual capital is a field that uses creativity, human intelligence, new management methods, new information technologies in the post –industrial knowledge economy to achieve desired organizational goal. (Ahangar, 2011). The importance of intellectual capital cannot be ignored in of manufacturing industry because employment of and efficient utilization of intellectual capital are crucial and pivotal in the success of the business enterprise (Ahuja and Narender, 2012). The efficient and effective management of intellectual capital therefore is of utmost significance for firms to operate both competitively and efficiently.

Intellectual capital promotes organizational performance; thus, performance is the competency of an organization to transform the resources within the firm in an efficient and effective manner to achieve firm goals. Firm goals vary depending on the purpose for which they are established. Organizations have profit, growth and survival as their main goals. Sohal (2007) asserts that firm performance consists of financial outcomes (return on invested capital or return on set and stock value or shareholder return). Firm performance is an indicator which measures how well an enterprise achieves their objectives (Jambekar, 2008). Firm performance comprises the actual output or results of an organization as measured against its intended outputs or goals and objectives. The dynamic nature of the Nigerian environment requires that innovations be created constantly in all the intangible assets of the organization in order to sustain the existence of a company and industrialization. Furthermore, the global competitive systems are mainly driven by technology, knowledge, expertise and relations with stakeholders and customers which may collectively be described as intellectual capital (Ahangar 2011). In the new economic system, intangible or intellectual assets have been recognized as the prominent resources needed for organizational survival and growth. Bornemann (1999) states that organizations which have managed their intellectual capital better, had achieved stronger competitive advantage than others. He also affirms that organizations which had strengthened their own intellectual capital management compared to the others had a better performance. Brennan and Connell (2000) also support the above assertion by saying that intellectual capital management plays an important role on the long-term business performance of an enterprise.

Therefore, for Nigerian manufacturing organizations to cope with today's competitive environment which is characterized by dynamic changing market, and fast changing customer demands, every organization must have the ability to anticipate on these changes and thus asks for a more dynamic strategic approach in engaging the collective minds of their organizations.

Therefore, the study is aimed at investigating the effect of Intellectual capital on Performance of the selected Manufacturing firms in Enugu Metropolis.

Statement of the Problem

The management found itself in knowledge-based economy in the third millennium in which cash, buildings and equipment could not be considered as competitive advantage differentiator (Fitz-enz, 2000). On the other hand when knowledge is the engine of development, successful organizations are those that leverage the knowledge and skills of their employees to achieve competitive advantage.

Nowadays the market value of the leading organization is much higher than their book value, this difference is interpreted as intellectual capital and includes the intangible assets that, unlike physical assets and despite the more importance and value, are not seen in the traditional balance sheet (Standfieid, 2005). There are many definitions of intellectual capital; Edvinson & Malon (1997) defined intellectual capital as knowledge that can be converted to the value. The main objective of this study is to examine the relationship between intellectual capital and financial performance. Public (2000) Intellectual capital (IC) has been frequently recognized as valuable intangible asset which is managed and utilized to stimulate innovativeness, creativity, competitive edge, value creation and boost corporate performance. In the present turbulent business environment, organizations need to build a culture that is knowledge and intellectually focused in order to ensure customer satisfaction, retain competent employees and increase their financial value base. Intellectual capital enhances competence and capability within an organization. For example, those employees that are well endowed with capabilities are able to share their expertise with others which increases the competence within an organization. Evidence has also shown that intellectual capital is recognized as a major corporate asset that is capable of generating sustainable competitive advantage and financial gain to business organizations.

However, some business organizations lack employees with innovation skills, problem-solving skills, and knowledge to do their jobs. This is because most organizations do not invest in employee education and training because of its cost implications. Some organizations lack good policies, procedures, systems, databases, and other infrastructural facilities that will enable human capital to work properly. Some organizations also have poor relationships with their employees, investors, customers, and suppliers. These will result in high employee turnover, lack of employee commitment, poor service delivery, low customer patronage, lack of profit, and non-achievement of the overall organizational goal. Thus, the study aims to investigate the effect of intellectual capital on the performance of selected manufacturing firms in Enugu metropolis.

Objectives of the Study

The main objective of the study is to determine the effect of Intellectual capital on Performance of selected manufacturing firms in Enugu metropolis, the specific objectives were to:

1. determine the effect of human capital on organizational efficiency of selected manufacturing firms in Enugu metropolis.
2. ascertain the extent to which Structural capital influence goal attainment of selected manufacturing firms in Enugu metropolis.
3. examine the nature of relationship between social capital and employee welfare of selected manufacturing firms in Enugu metropolis.

Research Questions

The research questions of this study include the following:

1. What is the effect of human capital on the organizational efficiency of selected manufacturing firms in Enugu metropolis.
2. To what extent does structural capital influence goal attainment of selected manufacturing firms in Enugu metropolis.
3. What is the nature of relationship between social capital and employee welfare of selected manufacturing firms in Enugu metropolis.

Research Hypotheses

For the purpose of the study, the following hypotheses were formulated

1. Human capital has significant effect on organizational efficiency of selected manufacturing firms in Enugu metropolis.
2. Structural capital influences goal attainment of selected manufacturing firms in Enugu metropolis.
3. There is a significant relationship between social capital and employee welfare of selected manufacturing firms in Enugu metropolis.

Scope of the Study

This study centers on the effect of Intellectual capital on Performance of selected manufacturing firms in Enugu metropolis. The firms studied are: Innoson ltd Plc, Juhel pharmaceutical ltd and Emenite Company ltd Emene all in Enugu metropolis.

The study covers the following dependent variables Human capital, structural capital and social capital. The independent variables were organizational efficiency, goal attainment and employee welfare. Top and Middle managers of the firms studied were used for the study The study was carried out in the year 2023.

Review of Related Literature

Concept of Intellectual Capital (IC)

Intellectual capital includes insight about information pertaining to the company's history; customers; vendors; processes, stakeholders; and all other information that might have value for a competitor that, perhaps, is not common knowledge. Adelman (2011) stresses that intellectual capital is not only organizational knowledge but it is also industry knowledge. It is the combination of both cognitive knowledge and intuitive/experience- related knowledge. Ian (2000) posits that intellectual capital encompasses both the inventory of knowledge-based assets as well as the capacity to acquire and assimilate new learning rapidly. It is often invisible, intangible, or difficult to detect and quantify. Many companies view intellectual capital as a spectrum, ranging from ideas, thoughts, the "stuff" in people heads (implicit knowledge) to "concrete" intellectual assets, like software code with true measurable value that can be tracked and managed. Intellectual capital encompasses the intellectual and learned abilities of the workforce- its skills, knowledge, abilities and behaviours. It is a compilation of the individual, group and corporate knowledge brought to the table in solving complex business problems. Intellectual capital consists of information, experience, wisdom and ideas that are linked to the organization's mission or principal purpose, and which will ultimately add value to the consumer of that organization's output (Ian, 2000).

Intellectual capital was divided into three categories based on their economic behavior. These are: human capital, structural capital and relational capital (Roos, Pike and Fernstrom, 2005). The intellectual capital resources are of special importance since they are the primary drivers of the organization's future value generation. This means that a change in the organization's intellectual capital resources portfolio is an early warning for a change in the organization's ability to generate value in the future (Roos, Pike and Fernstrom, 2005). Marr and Schiuma (2001) cited in Fragouli (2009) define intellectual capital as 'the group of knowledge assets that are attributed to an organization and most significantly contribute to an improved competitive position of these organization by adding value to defined stakeholders".

Armstrong (2012) posits that intellectual capital is the stocks and flows of knowledge available to an organization. These can be regarded as the intangible resources associated with people which, together with tangible resources (money and physical assets), comprise the market or total value of a business. The term intellectual capital has existed for a long time but the concept is not yet in common use throughout the business world (Roos, Pike and Ternstron, 2005). They define intellectual capital as all non-monetary and nonphysical resources that are fully or partly controlled by the organization and that contribute to the organization's value creation. The authors divided intellectual capitals into three categories based on their economic behaviour. These are: Human capital, Structural capital and social capital.

Stewart (1997) defines intellectual capital from the view point of organizational resources, related to creating wealth investment in knowledge, moral assets, and experience. Marr (2005) defines intellectual capital in line with Stewart's idea, Marr sees intellectual capital as a group of knowledge assets and is considered among the features of that organization and significantly leads to improvement of competitive situation of organization through increase of added value for key stakeholders of organization. Intellectual capital is a knowledge companies applied to gain competitive advantage and also add value to such an organization (Bontis, 2008). Intellectual capital operationally can be defined as intellectual material that has been formulized, captured and leveraged to produce a higher valued asset to an organization (Klein and Prusoik, 1994). Intellectual capital includes all non-tangible resources that (a) are attributed to an organization and (b) contribute to the delivery of the organization's value proposition (Marr, 2008).

Intellectual capital encompasses both the inventory of knowledge – based assets as well as the capacity to acquire and assimilate new learning rapidly. It is often invisible, intangible, or difficult to detect and quantify (Yi Chan and Yen-Chan, 2010). Many organizations view intellectual capital as a spectrum, ranging from ideas, thoughts, and the "stuff in people's head (implicit knowledge) to "concrete" intellectual assets, like software code, with true measurable value that can be tracked and managed (Ian, 2008) By this definition, intellectual capital includes the organization's intellectual property – its legally protectable and exploitable intangible assets.

Components of Intellectual Capital

Human Capital

Human capital (HC) consists of skills and knowledge possessed by employees and goes with them when they leave the firm (Čater & Čater, 2009); such intangible capital cannot be retained by the firm. Human capital includes employees, their knowledge and experience, the organization's relationship with employees, employee training and appraisal, employee satisfaction, employee review of the organization, etc., which all contribute to the organization's capital. If an organization has a lower employee turnover rate, there are chances of high intellectual capital. **Examples are** leadership and managerial skills, key employees and their knowledge, professional competencies, work ethics, and work culture, employee training, etc.

In context of the RBV, Wright, McMahan and Mcwilliams (1994) argue that a firm can gain a competitive advantage through a pool of human capital and, moreover, firms today evaluate their available resources to select a suitable strategy. According to Subramaniam and Youndt (2005), human capital is the key resource of the firm in an era where knowledge and skills of the employees are essential to create a sustainable competitive advantage. HC theory further explains the importance of HC as a major driver of a firm's productivity and assesses the employees' possession of necessary skills and knowledge to fulfil the requirements of their jobs. HC is important in industries such as banking and pharmaceuticals where firms compete in innovation and advancement. These firms need employees who possess innovation and problem-solving skills.

Structural Capital

Structural capital (SC) is a component of IC that remains with the firm when employees leave it. SC consists of policies, procedures, systems, databases, Vision, Mission, Structures, goals of the organization, its work culture, its approach towards employees training and providing knowledge, its tools, programs ways of working, and best practices and other infrastructure facilities that enable human capital to work properly. According to Hobley and Kerrin (2004), SC consists of the procedures, processes and systems in which employees actually make use of their available knowledge and skills towards wealth creation. The authors discuss the processes (how a firm converts its input into final product) as a unique resource of the firm which, once acquired, then later it can be retained and legally protected by the firm. Firms with sound SC will give their employees opportunities to exploit their knowledge and skills to create competitive advantage (Florin et al., 2002). Conversely, a firm with poor SC fails to achieve its performance targets (Widener, 2006). In today's knowledge-based economies, firms are struggling to differentiate on the basis of quality and innovation. Thus, it is necessary to invest in SC, which allows HC to fully utilise the skills and creativity, which increases the firm's performance.

Social or Relational Capital

Nahapiet and Ghoshal (1997) argue that *social capital (SsC)* consists of resources acquired by the firm through relationships between individuals or with society. Social Capital results from human connections based on confidence and socialization that contributes towards competitive advantage for the firm (Cohen & Levinthal, 1990; Nahapiet & Ghoshal, 1998). Bueno *et al.* (2004) conclude that SsC plays a vital role in the overall development of IC. Social or Relational capital includes the organization's relationship with employees, its investors, its customers, its suppliers, etc. review of all investors, customers, suppliers, and employees. Feedback also matters, and ways of improving and developing relationships contribute to relational capital. For example, an organization with low employee turnover, honest customers, etc., has a high intellectual capital base. **Examples are** Customer satisfaction, relationship with employees, customers and stakeholders, contracts with service providers, reputation in the community, investor feedback rating, etc.

Organizational Performance

Organizational performance is the most widely used dependent variable in any area of management. Lingand Huang (2012) defined organizational performance as the sum of accomplishments attained by business or departments involved in an organization goal. Venkatraman and Ramanujam (1986) amongst other management theorists observed that there is no agreement on performance measures as scholars operationalize the concept depending on their discipline of study. Their view agrees with Fire and William (2003) who opined that lack of consensus on definition arises because the concept is associated with a variety of firms overall wellbeing ranging from financial profitability, output levels to market levels**.**

Performance Variables as used in the Study

i. **Organizational Efficiency:** Process of using fewer resources, as well as less time and less money, to achieve the same goal. Organizational effectiveness: Ability to attain the goal by doing the "right things (Ahmad et al., 2012; Seema& Maryam, 2013; Aaron et al., 2015). Additionally, Organizational efficiency is the organization's ability to implement its plans using the smallest possible expenditure of resources. This means creating smart business goals that use only the resources absolutely necessary for success. The goal is to minimize risk as much as possible. The more easily and cost effectively an organization reaches its goals, the more profitable it will be (Linda & Michael, 2014)

ii. **Goal attainment**
Goal attainment is the process through which human and other resources are mobilized for the attainment of collective goals and purposes. In a social system, the goal attainment functions are met through political activities and mobilization occurs through the generation and exercise of power (Jamal, and Naser, 2003). Goals are specific targeted achievements of an individual or organization. Goals have a pervasive influence on employee behavior and performance in organizations and management practice (Locke & Latham, 2002).

iii. **Employee Welfare**
The term "welfare" suggests many ideas, meanings and connotations, such as the state of wellbeing, health, happiness, prosperity and the development of human resources. The concept of welfare can be approached from various angles. Welfare has been described as a total concept. It is a desirable state of existence involving physical, mental, moral and emotional well- being. All these four elements together constitute the structure of welfare on which its totality is based. The Oxford Dictionary defines labour welfare as "efforts to make life worth living for worker". Another definition implies that welfare is fundamentally an attitude of mind on the part of management, influencing the method by which management activities are undertaken.

Theoretical Review

Resource Based Theory

The resource based (RB) theory is considered the pioneer that focused on the importance of intangible assets for firms (Barney, 1991). The basic argument in this theory is that the competitive advantage of the modern firm should lie in its use of tangible as well as intangible assets. The intangible assets included in this theory should be unique and inimitable which and can build a sustainable competitive advantage for the firm. This theory argues that any firm is a bundle of tangible and intangible resources that depend on each other. This means that the performance of tangible assets depends upon the performance of intangible assets and vice versa Physical and intangible assets have long been considered strategic resources for a firm. With the passage of time, the focus of this theory has been mainly dragged towards intangible resources (Reed *et al.*, 2006). These authors argue that it is actually intangible assets or IC capital that contributes more towards a sustainable competitive advantage for firms. They argue that physical assets such as plant, machinery and financial assets are generic and can be substituted at any time by any firm. This argument supports Youndt *et al.* (2004) who conclude that it is only IC that contributes significantly towards value creation and hence builds a sustainable competitive advantage for the firms in the knowledge economy era.

Empirical Review

Human Capital and Organizational Efficiency

Sedeaq (2018) did a study on the impact of intellectual capital on firm performance of Taukish real estate companies listed in Borsa Istanbul, using data of 27 listed companies over the period 2004-2015. Value Added Intellectual Coefficient (VAIC) method is utilized as a measure of intellectual capital (IC). Methodology- An OLS regression is used to examine the impact of intellectual capital (VAIC); Human capital efficiency (HCE), Structural capital efficiency (SCE), and Capital employed efficiency (CEE) on market, productivity, and financial performance. Findings- The findings show that SCE is considered as a key role of value creation in real estate companies where it has a positive significant relation with MB, ROE, and EPS before the crisis and with ROA and ROE after the crisis. HCE show a positive significant relation with ROA and ROE before the crisis and a negative significant association with MBand ATO after the crisis. CEE show a negative significant impact on ATO after the crisis. VAIC shows a significant positive impact on ROA, ROE, and EPS before the crisis, while it has the same relation with ROE after the crisis. Conclusion- Although the good result of using intellectual capital for value creation, real estate Turkish companies still weakly depend on its intellectual capital.

Hesniati and Erlen (2021) studied the effect of intellectual capital on organizational performance in Batam City. The study involved 54 directors of the rural bank. The results of this empirical study indicate that there is a significant relationship between structural capital, customer capital, human capital, and technology capital on organizational performance in Batam City. Meanwhile, social capital and spiritual capital show no significant relationship to organizational performance in Batam City. The results of this study provide additional knowledge about the relationship between intellectual capital and organizational performance.

Structural Capital and Organizational Goal Attainment

Jian and Binghan (2018) did a study on impact of IC on financial performance and sustainable growth in the Korean manufacturing industry. Multiple regression models are applied with data collected from 390 manufacturing companies listed on the Korean Stock Exchange during 2012–2016. The results of the analysis show that IC has a positive impact on financial performance and companies' sustainable growth. In addition, companies' performance and sustainable growth are positively related to physical capital, human capital (HC), and relational capital (RC). RC is found to be the most influencing factor. Finally, innovative capital captures additional information on structural capital (SC) which negatively affects the performance of Korean manufacturing companies. The results extend the understanding of IC in creating corporate value and building sustainable advantages in emerging economies. The study concluded that intellectual capital promote sustainability of orgnisational efficiency.

Taghizadeh and Akbari (2012) did a study on the impact of intellectual capital on the market value and the financial performance of the firms in Tehran. The efficiency of the value added by corporate intellectual ability (Value Added Intellectual Coefficient) was incorporated to measure the intellectual capital construct. The analyses were performed using data derived from the financial statements of 28 firms listed on the Tehran Stock Exchange (TSE) during a four-year period from 2006 to 2009. Correlation and Ordinary Least Square (OLS) regressions have been carried out on panel data to check the impact of intellectual capital on firms' market value and financial performance. While the findings of the study failed to support most of the hypotheses it was shown that there was a statistically significant relationship between structure capital efficiency and financial performance (ROE, ROA). The study concluded that intellectual capital has increasingly been recognized as an important strategic asset for sustainable corporate competitive advantages.

Muhammad, Christopher and Cuong (2017) conducted a study on dynamic relationship between intellectual capital (IC) and firm performance in Australia (FP) through system generalised methods of moments, when previous studies produced divergent results based on static OLS or fixed-effects estimations. Based on 571 listed firms in Australia for the period of 2005–2014 (5518 firm-years) this study reveals that IC efficiency is positively significant with ROA and ROE – which endorses resource-based theory. Further analysis shows that human capital, structural capital and physical capital are also significant and confidently endorse resource-dependency and organisation-learning theories. The study concluded that make investments in human capital in order to increase their motivation level or to enable employees to generate new ideas.

Social Capital and Employee Welfare

Malina, et al. (2017) carryout a study on intellectual capital and firm performance of commercial banks in Malaysia. The purpose of this paper is to determine the relationship between the level of intellectual capital efficiency in terms of Human Capital, Capital Employed and Structural Capital (VAIC) with the commercial banks performance in Malaysia from the traditional accounting based perspective that comprises of ROA and ROE. Overall results revealed the relationship between intellectual capitals with performance of 18 commercial banks in Malaysia. Additionally, the results showed significance impact of intellectual capital variables namely Value-Added Capital Employed (VACA), Value Added Human Capital (VAHU) towards bank performance. It is suggested that intellectual capital do matters and should be linked to firm productivity. The study implies that the importance of intellectual capital should be emphasized not only to the commercial banks but also to the emerging market of Islamic banks in Malaysia or any other industries for future research.

Gap in Empirical Review

On the basis of the afore-mentioned literature on the effect of Intellectual Capital on performance of Selected Manufacturing firms in Enugu Metropolis., one can say the following: There are mixed findings due to the variation of environment and time of study. There are also different methodological approaches. There is variation in terms of variables used for the study; dependent variables were Human capital, structural capital and social capital. The independent variables were organizational efficiency, goal attainment and employee welfare, so far to the best of knowledge, there seem to be no study in Nigeria that has specifically looked at these variables as used in this work. It is against this background that this study will serve to fill the gap and add to empirical literature in Nigeria.

Methodology

This chapter deals with the method that was used to gather data for this research. The chapter describes the research design, sources of data, population of the study, determination of sample size, and description of research instrument, data analyses techniques, validity of the research instrument and reliability of the research instrument.

Research Design

For the purpose of this study, survey research design was adopted. Given the nature of this study, survey research design will be employed. A survey is a series of self-report measures administered either through an interview or a

written questionnaire (Stangor, 2007:103). It is a well-accepted practice for collecting data in many fields of research, particularly in the social sciences and organizational behaviour (Roztocki and Morgan, 2002:89).

Area of Study

The study was conducted in Enugu Metropolis. The firms studied were Innoson ltd Emene, Juhel phamacitical ltd Emene and Emenite Company ltd Emene all in Enugu metropolis.

Sources of Data

The data used for this research was obtained, specifically from two sources namely; primary and secondary data.

a. Primary Data

Primary dataare the type of data that are collected by researchers directly from main sources through interviews, surveys, questionnaire, and experiments. Structured questionnaire was administered to the respondents to ascertain the necessary information

b. Secondary Data

Secondary data are facts that the researcher collected from already existing sources (Ezigbo, 2011). In this study, secondary data were collected from textbooks, journals, and internet.

Population of the Study

The population of the study includes both Top managers and middle managers of the selected manufacturing firms: Innoson ltd Plc, Juhelphamacitical ltd andEmenite Company ltd Emene.

Table 1: Population of the study

Firms used for the Study	Top Managers	Middle Managers	Total
Innoson ltd	12	**24**	**46**
Juhel phamacitical ltd	10	18	28
Emenite Company ltd Emene	10	23	23
Total	**32**	**65**	**97**

Source: Human Resource Department of the firms studied

Sampling Technique

The entire population was used for the study therefor the sample size was 97. Stratified sample technique was adopted.

Method of Data Collection

A structured questionnaire was used as an instrument for data collection in the study. The questionnaire was designed in an opened ended question. In order to obtain responses from respondents, the researcher made use of 5-point Likert scale system. They were: strongly agree, agree, indifference, disagree, and strongly disagree.

Validity of the Instrument

Validity is the most critical criterion, and indicates the degree to which an instrument measures what it is supposed to measure. A proper structuring of the questionnaire and a conduct of pre-test of every question contained in the

questionnaire was carried out to ensure that the instrument is valid. The instrument was given to five management experts from the industry and academia who made the necessary correction.

Reliability of the Instrument

To ensure reliability of the instrument, a test-retest method of reliability was applied. The test-retest was carried out using twelve (12) copies of the questionnaire prepared and administered to the staff (respondents) of the selected manufacturing firms. After some days, the twelve (12) copies of the instrument were re-administered on the same respondents. The first and second sets of scores were correlated using Spearman order rank correlation coefficient. The result gave a reliability index of 0.988 indicating a high degree of items consistency. The reliability was calculated as follows:

Table 2: Reliability Table

Items	*First average X*	*Second average Y*	*Xr*	*Yr*	*D*	d^2
1	2	2	1	1	0	0
2	2	2	1	1	0	0
3	2	1	1	1	0	0
4	1	2	1	2	1	1
5	1	2	2	2	0	0
6	2	2	2	2	0	0
7	1	1	2	2	0	0
8	1	1	2	2	0	0
						$\sum d^2 = 1$

Source: Field Survey, 2023

$$r = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

$$= 1 - \frac{6(1)}{8(8^2-1)}$$

$$= 1 - \frac{6(1)}{8(64-1)}$$

$$= 1 - \frac{6}{8(63)}$$

$$= 1 - \frac{6}{504}$$

$$= 1 - 0.0119$$

$$r = 0.988$$

Methods of Data Analysis

Tables and percentages were applied for data analysis. Hypotheses 1, and 2 were tested with simple linear regression using special package for social science (SPSS Version 20.00). while Pearson product moment correlation coefficient was used to test hypothesis three. All the hypotheses were tested at 5% error.

Formula for spearman rank order correlation analysis:

$$r = \frac{n\,\Sigma xy - \Sigma x\,\Sigma y}{\sqrt{[n\,(\Sigma x^2) - (\Sigma x)^2][(n\Sigma y^2) - (\Sigma y)^2]}}$$

Coefficient of determination r^2

Fomula for regression

$Yi = f(X_1 \beta) + ei$

X = dependent variable

F = function

X_1 = independent variable

β = coefficient

ei = error terms

Results

Data Presentation and Analyses

Table 3: Distribution and Return of Questionnaire

Name of Organization	Copies Distributed	Copies returned	Percentage returned	Percentage not returned
Innoson Ltd	46	41	47.4	47.1
Juhel Nigeria Limited	28	26	28.9	29.9
Emenite Nigeria Ltd	23	20	23.7	23
Total	97	87	100	100

Field survey 2023

Table 3 above shows that out of 97 copies of questionnaire distributed 87 or 89.69% were returned which shows a positive return rate.

Analysis of Data relating to Research Questions

Table 4: Effect of human capital on organizational efficiency of selected manufacturing firms in Enugu metropolis

	Human capital	*SA*	*A*	*U*	*D*	*SD*
1	Our organization retain those who possess the necessary skills	45 (51.72%)	20 (22.99%)	5 (5.75%)	11 (12.64%)	6 (6.90%)
2	Human capital is competitive advantage tool use by banks	30 (34.48%)	43 (49.43%)	4 (4.60%)	7 (8.05%)	3 (3.45%)
	Organisational efficiency					
4	Our organisations use limited resource to achieve set-out goal	50 (57.47%)	20 (22.99%)	3 (3.45%)	4 (4.60%)	10 (11.49%)
5	Our 0rganization use time as a tool to achieve result	33 (37.93%)	31 (35.63%)	6 (6.90%)	8 (9.20%)	9 (10.34%)
6	Our organisation recognise employee achievement and allow them to use their initiative at work	40 (45.98%)	27 (31.03%)	4 (4.60%)	7 (8.05%)	9 (10.34%)

Source: *Field Survey,* 2023

Item 1 of table 4 indicates that 45(51.72%) of the respondents strongly agreed that their organization retain those who possess the necessary skills.20(22.99%) 5(5.75%) were undecided,11(12.64%) disagree that their organization retain those who possess the necessary skills while 6(6.90%) of the respondents strongly disagreed with the statement.

Item 2 of the table 4 states that Human capital is a competitive advantage tool use by organizations. 30 (34.48%) strongly agreed to the statement, 43(49.43%) agreed, 4(4.60%) were undecided, 7(8.05%) disagreed while 3(3.45%) strongly disagreed to the statement.

In item 3 of the table 4: 40(45.98%) of the respondents strongly agreed that their organizations use human capital to promote employee innovation and advancement, 37 (42.53%) agreed, 3(3.45%) were undecided, 3(3.45%) disagreed while 4(4.60%) strongly disagreed that their organizations use human capital to promote employee innovation and advancement.

In item 4 of the table 4: 50(57.47%) of the respondents strongly agreed that their organisations use limited resource to achieve set-out goal, 20 (22.99%) agreed, 3 (3.45%) were undecided, 4(4.60%) disagreed while 10 (11.49%) strongly disagreed that Our organisations use limited resource to achieve set-out goal.

Item 5 of table 4 indicates that 33(37.93%) of the respondents strongly agreed that their organizations use time as a tool to achieve possible results. 31(35.63%) agreed, 6(6.90%) were undecided,8 (9.20%) disagree while 9(10.34%) strongly disagreed that their organizations use time as a tool to achieve results

Item 6 of table 4 indicates that 40(45.98%) of the respondents strongly agreed that their organisations recognise employee achievement and allow them to use their initiative at work. 27(31.03%) agreed, 4(4.60%) were undecided, 7 (8.05%) disagree while 9(10.34%) strongly disagreed that their organization recognise employee achievement and allow them to use their initiative at work

Table 5: Whether structural capital has influence on goal attainment of selected manufacturing firms in Enugu Metropolis

	Structural capital	*SA*	*A*	*U*	*D*	*SD*
1	Our organization's policies, and procedures assist us to achieve our goal	47 (54.02%)	22 (25.29%)	5 (5.75%)	7 (8.05%)	6 (6.90%)
2	Our organization's databases are strong and reliable to satisfy our customer	37 (42.53%)	36 (41.37%)	4 (4.60%)	7 (8.05%)	3 (3.45%)
3	Our organization's structure is flexible and adaptive in nature.	24 (27.59%)	47 (54.02%)	5 (5.75%)	5 (5.75%)	6 (6.90%)
	Goal attainment					
4	Customer are satisfy with the product offered by the organization	50 (57.47%)	20 (22.99%)	3 (3.45%)	4 (4.60%)	10 (11.49%)
5	Our organization provides all the resources needed to achieve the set goal	39 (44.83%)	25 (28.74%)	6 (6.90%)	8 (9.20%)	9 (10.34%)
6	Our organization render quality service to their customer	40 (45.98%)	27 (31.03%)	4 (4.60%)	7 (8.05%)	9 (10.34%)

Source: *Field Survey,* 2023

Item 1 of table 5: Indicates that 47(54.02%) of the respondents strongly agreed with the statement that Our organization's policies, and procedures assist us to achieve our goal.22 (25.29%) 5(5.75%) were undecided, 7(8.05%) disagree that organizational policies, and procedures assist us to achieve our goal while 6(6.90%) of the respondents strongly disagreed to the statement.

Item 2 of the table 5: states that Our organization's database is strong and reliable to satisfy our customer. 37 (43.53%) strongly agreed with the statement, 36(41.37%) agreed, 4(4.60%) were undecided, 7(8.05%) disagreed while 3(3.45%) strongly disagreed with the statement.

In item 3 of the table 5: 24(27.59%) of the respondents strongly agreed that the structure of the organization is flexible and adaptive, 47 (54.02%) agreed, 5(5.57%) were undecided, 5(5.57%) disagreed while 6(6.90%) strongly disagreed to the statement.

In item 4 of the table 5: 50(57.47%) of the respondents strongly agreed that Customer are satisfied with the product offered by the organization, 20 (22.99%) agreed, 3 (3.45%) were undecided, 4(4.60%) disagreed while 10 (11.49%) strongly disagreed to the statement.

Item 5 of table 5: Indicates that 39(44.83%) of the respondents strongly agreed that Our organization provides all the resources needed to achieve the set goal. 25(22.32%) agreed, 6(6.90%) were undecided,8 (9.20%) disagree while 9(10.34%) strongly disagreed to the statement.

Item 6 of table 5 Indicates that 40(45.98%) of the respondents strongly agreed that Our organization render quality service to their customer. 27(31.03%) agreed, 4(4.60%) were undecided,7 (8.05%) disagree while 9(10.34%) strongly disagreed to the statement.

Table 6: The relationship between social capital and employee welfare of the selectedmanufacturing firms in Enugu Metropolis

	Social capital	SA	A	U	D	SD
1	Our organizations create platform for customers interactions	47 (54.02%)	20 (22.99%)	5 (5.75%)	9 (10.34%)	6 (6.90%)
2	Our organizations engage in aftersales services to ensure customer satisfaction	37 (42.53%)	36 (41.38%)	4 (4.60%)	7 (8.05%)	3 (3.45%)
3	Our organizations are proactive in performing social responsibilities	24 (27.59%)	47 (54.02%)	5 (5.75%)	5 (5.75%)	6 (6.90%)
	Employee welfare					
4	Our organizations ensure that employees' needs are satisfied to a large extent.	60 (68.97%)	13 (14.94%)	3 (3.45%)	4 (4.60%)	7 (8.05%)
5	Our organizations ensure that employees are mentally sound through periodic training.	44 (50.57%)	25 (28.74%)	6 (6.90%)	8 (9.20%)	4 (4.60%)
6	Employees welfare packages improve the mental and moral health of the workers	40 (45.98%)	27 (31.03%)	4 (4.60%)	7 (8.05%)	9 (10.34%)

Source: *Field Survey,* 2023

Item 1 of table 6: Indicates that 47(54.02%) of the respondents strongly agreed with the statement that our organizations create platform for customers interractions.20 (22.99%) 5(5.7546%) were undecided,11(9.82%) disagreed while 6(5.36%) of the respondents strongly disagreed to the statement.

Item 2 of the table 6: states that our organizations engage in aftersales services to ensure customer satisfaction. 37 (33.04%) strongly agreed with the statement, 61(54.46%) agreed, 4(3.57%) were undecided, 7(6.25%) disagreed while 3(2.68%) strongly disagreed with the statement.

In item 3 of the table 6: 24(27.59%) of the respondents strongly agreed that our organizations are proactive in performing social responsibilities, 47 (54.02%) agreed, 5(5.75%) were undecided, 5(5.75%) disagreed while 6(6.90%) strongly disagreed to the statement.

In item 4 of the table 6 :60(68 .97%) of the respondents strongly agreed that our organizations ensure that employees' needs are satisfied to a large extent., 13 (14.94%) agreed, 3 (3.45%) were undecided, 4(4.60%) disagreed while 7 (8.05%) strongly disagreed to the statement.

Item 5 of table 6 Indicates that 44(50.57%) of the respondents strongly agreed that Our organizations ensure that employees are mentally sound through periodic training. 25(28.74%) agreed, 6(6.90%) were undecided,8 (9.20%) disagree while 4(4.60%) strongly disagreed to the statement.

Item 6 of table 6 Indicates that 40(45.89%) of the respondents strongly agreed that employees welfare packages improve the mental and moral health of the workers. 27(31.03%) agreed, 4(4.60%) were undecided,7 (8.05%) disagree while 9(10.34%) strongly disagreed to the statement.

Test of Hypotheses

Three hypotheses were proposed in section one of this study to seek explanations on the effect of Intellectual Capital on performance of Selected Manufacturing firms in Enugu Metropolis. To test the hypotheses, simple regression statistical technique and Pearson product moment correlation coefficient were used. All analyses were carried out via the aid of Microsoft's Statistical Package for Social Sciences (SPSS) version 20.

Test of Hypothesis One

Hi: Human capital has significant effect on organizational efficiency of selected manufacturing firms in Enugu Metropolis.
Ho: Human capital has no significant effect on organizational efficiency of selected manufacturing firms in Enugu Metropolis

Table 7a Model Summary

Model		R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.921[a]	.847	.846	.41481	.417
a. Predictors: (Constant), Human capital					
b. Dependent Variable: Organisational efficiency					

Table 7b ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	81.190	1	81.190	471.843	.000[b]
	Residual	14.626	85	.172		
	Total	95.816	86			
a. Dependent Variable: Organisational efficiency						
b. Predictors: (Constant), Human capital						

Table 7c Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.348	.077		4.516	.000
	Human capital	.724	.033	.921	21.722	.000
a. Dependent Variable: Organisational efficiency						

R = .921
R^2 = .847
F = 471.843
T = 21.722
DW = .417

The regression sum of squares (81.190) is greater than the residual sum of squares (14.626) and this indicates that more of the variation in the dependent variable is explained by the model. The significance value of the F statistics (0.000) is less than 0.05, which means that the variation explained by the model is not due to chance. The significance of the F value indicates that the model statistically significantly predicts the outcome variable.

The correlation coefficient R has a value of 0.921 and this indicates that there is positive relationship between Human capital and Organisational efficiency. R square, the coefficient of determination, shows that 84.7% of the variation in Organisational efficiency is explained by the model.

In the linear regression model, a low error of estimate with a value of ..41481 is indicated. A value of .417 for the Durbin Watson statistics which is less than 2 indicates that there is no auto correlation. The human capital coefficient of 0.921 indicates a positive relationship between human capital and Organisational efficiency which is statistically significant (t = 21.722). Therefore, the null hypothesis should be rejected and the alternative hypothesis accordingly accepted thus human capital significantly influences Organisational efficiency of the selected manufacturing firms.

Test of Hypothesis Two

Hi: Structural capital influences goal attainment of selected manufacturing firms in Enugu Metropolis
Ho: Structural capital does not influences goal attainment of selected manufacturing firms in Enugu Metropolis

Table 8a Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.885[a]	.784	.781	.50290	.293

a. Predictors: (Constant), Structural capital
b. Dependent Variable: Goal attainment

Table 8b ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	78.020	1	78.020	308.491	.000[b]
	Residual	21.497	85	.253		
	Total	99.517	86			

a. Dependent Variable: Goal attainment
b. Predictors: (Constant), Structural capital

Table 8c Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.041	.106		-.389	.698
	Structural capital	.757	.043	.885	17.564	.000

a. Dependent Variable: Goal attainment

R = .885
R^2 = .784
F = 788.580
T = 17.564
DW = .293

The regression sum of squares (78.020) is greater than the residual sum of squares (21.497) and this indicates that more of the variation in the dependent variable is explained by the model. The significance value of the F statistics (0.000) is less than 0.05, which means that the variation explained by the model is not due to chance. The significance of the F value indicates that the model statistically significantly predicts the outcome variable.

The correlation coefficient R has a value of 0.885 and this indicates that there is positive relationship between structural capital and goal attainment. R square, the coefficient of determination, shows that 78.4% of the variation in goal attainment is explained by the model.

In the linear regression model, a low error of estimate with a value of .50290 is indicated. A value of .293 for the Durbin Watson statistics which is less than 2 indicates that there is no auto correlation.

The structural capital coefficient of 0.885 indicates a positive significance structural capital and goal attainment which is statistically significant (t = 17.564). Therefore, the null hypothesis should be rejected and the alternative hypothesis accordingly accepted thus structural capital significantly influences goal attainment of the selected manufacturing firms.

Test of Hypothesis Three

Hi: There is significant relationship between social capital and employee welfare of selected manufacturing firms in Enugu Metropolis.

Ho: There is no significant relationship between social capital and employee welfare of selected manufacturing firms in Enugu Metropolis.

Table 9a Descriptive Statistics

	Mean	Std. Deviation	N
Social capital	1.9655	1.31581	87
Employee welfare	1.6667	1.06385	87

Table 9b Correlations

		Social capital	Employee welfare
Social capital	Pearson Correlation	1	.914**
	Sig. (2-tailed)		.000
	N	87	87
Employee welfare	Pearson Correlation	.914**	1
	Sig. (2-tailed)	.000	
	N	87	87

**. Correlation is significant at the 0.01 level (2-tailed).

The descriptive statistics of social capital and employee welfare is shown in table 9a. The table shows a mean response of 1.9655 and standard deviation of 1.31581 for social capital and a mean response of 1.6667 and standard deviation of 1.06385 for employee welfare and number of respondents 87. A close examination of the standard deviation values reveals a significant difference in the scores of the two variables. This implies that the variability of data points between the dependent and independent variables is about the same.

Table 9b displays the Pearson correlation coefficient for social capital and employee welfare. The correlation coefficient shows a value of 0.914. This value indicates that correlation is significant at 0.05 level (2tailed) and implies that there is a significant positive relationship between social capital and employee welfare (r = .914). The computed correlation coefficient is greater than the table value of r = 0.196 with 85 degrees of freedom (df. = n-2) at alpha level for a two-tailed test (r = .914, p< .05). As a result, since the computed r = .914, is greater than the table value of 0.196. We reject the null hypothesis and concluded that there is a relationship between social capital and employee welfare of the selected first banks (r =. 914, P<.05).

Discussion of Findings

The first hypothesis sought to determine the effect of human capital on organizational efficiency of selected manufacturing firms in Enugu metropolis. The hypothesis was tested using regression analysis. The human capital coefficient of 0.921 indicates a positive relationship between human capital and Organisational efficiency which is statistically significant (t = 21.722). Therefore, the null hypothesis should be rejected and the alternative hypothesis accordingly accepted thus human capital significantly influences Organisational efficiency of the selected manufacturing firms. This finding is in conformity to the submission of Sedeaq (2018) who did a study on the impact of intellectual capital on firm performance of Turkish real estate companies listed in Borsa Istanbul. The study concludes that although there is good result in using intellectual capital for value creation and real estate, that Turkish companies still weakly depend on its intellectual capital. *Hesniati and Erlen (2021) studied on* the effect of intellectual capital on organizational performance in Batam City. The result of the empirical study indicates that

there is a significant relationship between structural capital, customer capital, human capital, and technology capital on organizational performance in Batam City.

The second hypothesis sought to ascertain the extent to which Structural capital influence goal attainment of selected manufacturing firms in Enugu metropolis. This hypothesis was tested using regression analysis. The analysis revealed that the structural capital coefficient of 0.885 indicates a positive significance structural capital and goal attainment which is statistically significant (t = 17.564). Therefore, the null hypothesis should be rejected and the alternative hypothesis accordingly accepted thus structural capital significantly influences goal attainment of the selected manufacturing firms. This finding is in accordance with the finding of Alwanga (2015) who examined business process outsourcing and performance among telecommunication firms in Kenya and found that, business process outsourcing has positive effect on the performance of the firms. Likewise, Chanvarasuth (2008) submits that business process outsourcing has positive impact on product quality of the firms. A similar result was obtained by Ohnemus (2018), who investigated German manufacturing firms. Hypothesis three investigated the effect of knowledge process outsourcing on efficiency of the selected manufacturing firms in Enugu State Nigeria. It was found that knowledge process outsourcing has significant and positive effect on efficiency of the firms. This finding supports the earlier submission of Jian and Binghan (2018) did a study on impact of IC on financial performance and sustainable growth in the Korean manufacturing industry. The results of the analysis show that IC has a positive impact on financial performance and companies' sustainable growth. In addition, companies' performance and sustainable growth are positively related to physical capital, human capital (HC), and relational capital (RC). RC is found to be the most influencing factor. Finally, innovative capital captures additional information on structural capital (SC) which negatively affects the performance of Korean manufacturing companies. Taghizadeh and Akbari (2012) did a study on the impact of intellectual capital on the market value and the financial performance of the firms in Tehran. The findings of the study failed to support most of the hypotheses but it shows that there was a statistically significant relationship between structure capital efficiency and financial performance (ROE, ROA).Muhammad, Christopher and Cuong (2017) conducted a study on dynamic relationship between intellectual capital (IC) and firm performance in Australia (FP) through system generalised methods of moments, when previous studies produced divergent results based on static OLS or fixed-effects estimations. Further analysis shows that human capital, structural capital and physical capital are also significant and confidently endorse resource-dependency and organisation-learning theories.

The third hypothesis examined the nature of relationship between social capital and employee welfare of selected manufacturing firms in Enugu metropolis. The computed correlation coefficient is greater than the table value of r = 0.196 with 85 degrees of freedom (df. = n-2) at alpha level for a two-tailed test (r = .914, p< .05). As a result, since the computed r = .914, is greater than the table value of 0.196. We reject the null hypothesis and concluded that there is a relationship between social capital and employee welfare of the selected first banks (r =. 914, P<.05). This is supported by Malina, et. al. (2017) in their study on intellectual capital and firm performance of commercial banks In Malaysia, Overall results revealed the relationship between intellectual capitals with performance of 18 commercial banks in Malaysia. Additionally, the results showed significance impact of intellectual capital variables namely Value-Added Capital Employed (VACA), Value Added Human Capital (VAHU) towards bank performance.

Summary of Findings

The findings at the end of this study include the following

i. Human capital significantly affects the organizational efficiency of the selected manufacturing firms in Enugu Metropolis (R = .921; F = 471.843; t= 21.722; p< 0.05)
ii. Structural capital significantly influences goal attainment of the selected manufacturing firms in Enugu Metropolis (r = .885; F = 788.580; t = 17.564; p< 0.05)
iii. There was a positive relationship between social capital and employee welfare of the selected manufacturing firms in Enugu Metropolis (r =. 914, P<.05).

Conclusion

The study concluded that intellectual capital incorporates knowledge management, "best practice" transfer and organizational learning and that can turn employees' skills, knowledge and expertise into values that are vital to organizational performance, Human capital represents in the organization a series of elements that refer to the knowledge and skills of workers. Human capital can be identified within organizations as the attitude and motivation of workers, skills, abilities, creativity and innovation, experience, personal characteristics, knowledge and efficiency

Recommendation

Based on the findings of this study the following recommendations were made:

i. that management of organizations should manage their Human capital through effective human capital management policy to achieve high productivity.
ii. that managers in organizations should formulate good policies and procedures that will guide them in achieving their goals through effective implementation.
iii. That management of the organizations should improve and develop strong relationships with the employees, its investors, customers, and suppliers to build human connections based on confidence and socialization that contributes towards competitive advantage for the firm.

Contribution to Knowledge

The core objective of this research is to determine the effect of Intellectual capital on Performance of selected manufacturing firms in Enugu metropolis The previous studies have focused on the general effect of Intellectual capital on organizational performance. In this study, the researcher has shifted focus to examining the effect of specific components of Intellectual capital to the key measures of organizational performance. The study has shown that effective management of intellectual capital will stimulate innovativeness, creativity, competitive edge, value creation and boast overall performance of manufacturing firms.

Furthermore, this study will be very functional to advancing researchers who will apply it as background for further study.

Area for Further Studies

i. Effect of Human capital on organizational efficiency of the selected manufacturing firms in Enugu Metropolis
ii. Structural capital and goal attainment of the selected manufacturing firms in Enugu Metropolis
iii. Effect of social capital on employee welfare of the selected manufacturing firms in Enugu Metropolis

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