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## TO ASSESS THE EFFECT OF INTELLECTUAL CAPITAL ON ORGANIZATIONAL PERFORMANCE IN THE MANUFACTURING SECTOR

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### ABSTRACT

*The main purpose of the research is to verify the effect of intellectual capital on organizational performance in manufacturing companies. The research adopted convenience sampling which took samples from the empirical studies of the Taiwan, china, and Spanish and Portuguese companies. The variables studied were individual capital, internal capital/structure and external capital/structure as the independent. The performance was in terms of market share, profitability, customer loyalty, long term suppliers as the dependent variables. The result shows that intellectual capital has a positive and significant effect on the organizational performance in manufacturing companies.*

### KEYWORDS

Intellectual capital, individual capital, internal structure, external structure organizational performance.

### 1.0 INTRODUCTION

#### 1.1 BACKGROUND OF THE STUDY

WEalth and growth in today's economy are primarily driven by intangible (intellectual) assets. The rise of new economy has highlighted the fact that the value created depends far less on their physical assets than on their intangible ones. These assets, often described as intellectual capital, are being recognized as the foundation of individual, organizational and national competitiveness in the twenty-first century (Wigg, 1997; Bounfour and Edvinsson, 2005). As noticed by Pike et al. (2002:659), "as the business society is developed, the key step in value creation has ascended an intellectual staircase".

Intellectual capital has been identified as a set of intangibles (resources, capabilities and competences) that drives the organizational performance and value creation (Roos and Roos, 1997; Bontis, 1998; Bontis et al., 2000). This suggests causal relationships between intellectual capital and organizational value creation (Marr and Roos, 2005). However, intangible assets seldom affect performance directly. Instead, they work indirectly through relationships of cause and effect (Kaplan and Norton, 2004).

From the management point of view it is essential to recognize that none of the elements of that set of intangibles is per se sufficient for a successful performance. These key elements need to be combined to generate value. In this context, intellectual capital is a phenomenon of interactions, transformations and complementarities, meaning that a resource's productivity may improve through the investments in other resources.

Despite the tremendous theoretical improvement during the last years, intellectual capital phenomenon requires theory and research methodology that enhances the integration of theory construction and theory testing. Research in intellectual capital is actually, at critical cross-roads with increased emphasis on developing theoretical concepts and testing relationships guided by such concepts. It is vital to consolidate some findings, namely arrive at a set of operational measures that meet minimal criteria of measurement.

Some authors (Churchill, 1979; Venkatraman, 1989; Straub, 1989) claim that the linkage between theoretical definitions and their corresponding measures have been generally weak, despite "the process of construct development and measurement is at the core of theory construction" (Venkatraman, 1989:944). Linking theory construction (exploratory) to theory testing (confirmatory) is a sine qua non condition for the management theory development (Hughes et al., 1986) and comparing findings in different settings is an important tool that serves that purpose.

Previous studies (Bontis, 1998; Bontis et al., 2000) demonstrate that intellectual capital is positively and significantly associated with organizational performance. The purpose of our study is: (i) to validate a set of operational measures, which compared with other studies, may result in a measurement instrument for financial sector; (ii) to examine interrelationships among intellectual capital components and organizational performance and; (iii) to study interaction effects among intellectual capital components and organizational performance.

#### 1.2 STATEMENT OF THE PROBLEM

Corporate success in the 21st century depends on four elements, namely abundant natural resources, sufficient funding, advanced technologies, and competent human resources (Lester C. Thurow, 1992). The era dominated by knowledge-based economy and Internet, nevertheless, led to the emergence of knowledge-intensive organizations, which in turn eroded the competitiveness of organizations that rely on a massive amount of natural resources and funding. The fact that a growing number of organizations have shifted their attention to knowledge integration and intellectual capital management shows many companies have come to realize that knowledge in the information-dominated era will eventually replace labor, capital, land and the other tangible assets as a major source of corporate competitiveness (Durcker, 1993; Jun-Long Hong, 2002).

As the awareness of "intellectual capital management" has been raised in recent years, intellectual capital is considered a magical weapon that enables an organization to increase/nurture intangible assets and subsequently build a sustainable competitiveness advantage (Barney and Wright, 1998; Jun-Long Hong, 2002). Intellectual capital affects the performance of the organization and this has led the study of the effect of intellectual capital on organizational performance. This study is summarized in the three purposes of the study as, to determine whether the individual competence affects organizational performance, to verify whether the internal structure affects organizational performance and to investigate whether external structure affects organizational performance.

#### 1.3 OBJECTIVES OF THE STUDY

##### 1.3.1 General objective

To investigate whether the intellectual competencies appropriately implemented affects organizational performance.

##### 1.3.2 Specific objectives

1. To determine whether the individual competence appropriately implemented affects organizational performance.
2. To verify whether the internal structure appropriately implemented affects organizational performance.
3. To verify whether the external structure appropriately implemented affects organizational performance in a positive and significant manner.

#### 1.4 RESEARCH QUESTIONS

1. Does individual competence affect the organizational performance?
2. Does internal structure affect organizational performance?
3. Does external structure affect organizational performance?

#### 1.5 JUSTIFICATION OF THE STUDY

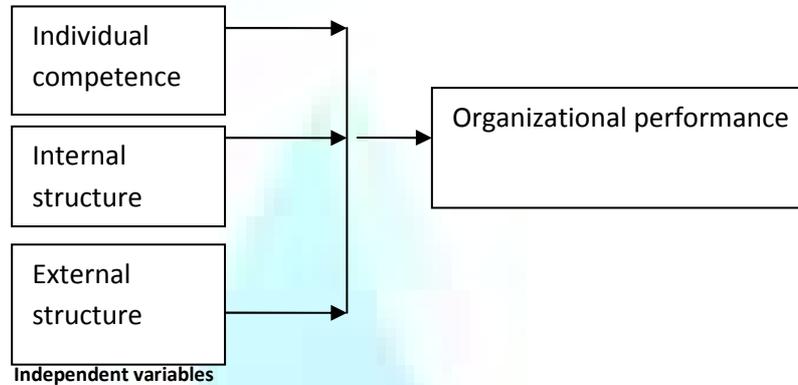
The purpose of this study was to assess the intellectual capital on organizations performance in the manufacturing sector. This study aimed to investigate how managers and employees of organizations use intellectual capital in their work, understand the significance of intellectual capital on organizations performance and reveal if there are any specific aspects of organizations that benefit from intellectual competence of workers.



## 2.4 AUTOPOIESIS THEORY

"Autopoiesis" (from Greek *αὐτο-* (auto-), meaning "self", and *ποίησις* (poiesis), meaning "creation, production") refers to a closed system capable of creating itself. The term was introduced in 1972 by Chilean biologists Humberto Maturana and Francisco Varela to define to the self-maintaining chemistry of living cells. Since then the concept has been also applied to the fields of systems theory and sociology. An autopoietic machine is a machine organized (defined as a unity) as a network of processes of production (transformation and destruction) of components which: (i) through their interactions and transformations continuously regenerate and realize the network of processes (relations) that produced them; and (ii) constitute it (the machine) as a concrete unity in space in which they (the components) exist by specifying the topological domain of its realization as such a network. The space defined by an autopoietic system is self-contained and cannot be described by using dimensions that define another space. When we refer to our interactions with a concrete autopoietic system, however, we project this system on the space of our manipulations and make a description of this projection.

## 2.5 CONCEPTUAL FRAMEWORK



Source : author (2013)

With individual competence means an employee's ability to take actions under various situations which involves explicit knowledge, skills, experiences, value-related judgment, and social network. Internal structure being the sum of patents, concepts, patterns, computer and management systems. External structure being relationships with customers and suppliers, which involves the brand, reputation and trademarks.

## 2.6 INTELLECTUAL CAPITAL

There is no widely accepted definition of intellectual capital. However, the literature revision point out that intellectual capital is essentially related to "knowledge that can be converted into value" (Cabrita, M and Vaz, J (2006) "Intellectual Capital and Value Creation: at least three elements are common in almost all definitions: (i) intangibility; (ii) knowledge that creates value and; (iii) effect of collective practice. This means that are excluded all irrelevant intangibles that have no function over the firm's future potential and it is assumed that competitive advantage depends on how efficient the firm is in building, sharing, leveraging and using its knowledge.

The most important challenge for researchers is to prove that intellectual capital creates value (MERITUM, 2001). Our focus is on intellectual capital value drivers and the way its different components interact to generate value. Which component is most valuable may have different answers depending on internal and external organizational variables.

The literature presents a great number of classification schemes for intellectual capital. However, a convergent taxonomy emerged, categorizing intellectual capital onto three components: (i) human capital; (ii) structural capital and; (iii) relational capital.

### 2.6.1 Human capital

Human capital is the primary component of intellectual capital (Edvinsson and Malone, 1997; Stewart, 1997; Bontis, 1998; Choo and Bontis, 2002), because human interaction is the critical source of intangible value in the intellectual age (O'Donnell et al., 2003). A macroeconomic perspective recognizes human capital as the driver of national economic activity, competitiveness and prosperity (OECD, 1996). On individual level, human capital is defined as a combination of four elements: (i) genetic inheritances; (ii) education; (iii) experience and; (iv) attitudes about life and business (Hudson, 1993). The organizational perspective refers to human capital as "the source of innovation and strategic renewal" (Bontis, 1998). Gupta and Roos (2001) added that "core intellectual capital", comprising competence, intellectual agility and attitude, are the potential of synergies for the value creation.

Knowledge generation and transfer is an essential source of firm's sustainable competitive advantage, but it entirely depends on the individuals' willingness. As such, if the human capital can suggest the economic potential of individuals within a firm, it is also true that the outcomes are intimately connected to motivation. Although not a goal itself, motivation should serve to support the organization's goal. Thus, managing motivation, especially balancing intrinsic and extrinsic motivation is an important and hard-to-imitate competitive advantage (Osterloh and Frey, 2000).

### 2.6.2 Structural capital

Structural capital represents the organization's capabilities to meet its internal and external challenges. It includes infrastructures, information systems, routines, procedures and organizational culture. Structural capital is the skeleton and the glue of an organization because it provides the tools (management philosophy, processes, culture) for retaining, package and move knowledge. Manufacturing industry scenario has recently changed. Globalization, deregulation and internationalization create new business challenges. In the past, companies sought to improve their balance sheet and asset growth, increasing profitability. But, since the Basle Accord, the emphasis is on assets productivity, capital efficiency and revenue growth. Information and communication technology has been largely used in a variety of ways to reduce costs, increase efficiency and accelerate innovation, drivers of today's manufacturing performance.

### 2.6.3 Relational/External capital

Relational capital is the knowledge embedded in the relationships with any stakeholder that influences the organization's life. The literature defends that relationships with stakeholders are the necessary condition for building, maintaining and renewing resources, structures and processes over time, because through external relationships firms can access critical and complementary resources. Recently, some authors (Prahalad and Ramaswamy, 2000) suggest that customers become a new source of competence for the organization because they renew the overall competence of the organization and rejuvenate the knowledge base preventing it from the obsolescence in a turbulent environment (Gibbert et al., 2001).

Relational capital can be measured as a function of longevity (Bontis, 2002), while marketing relationship literature argues that long lasting relationships are a source of competitive advantage (Håkansson and Snehota, 1995). There is evidence of how employees' satisfaction, motivation and commitment have positive influence in customer satisfaction, loyalty and retention, leading to higher firm's productivity (Kaplan and Norton, 1996, 2004). www.ejkm.com ©Academic Conferences Ltd 12 Maria do Rosário Cabrita and Jorge Landeiro Vaz .

## 2.7 ORGANIZATIONAL PERFORMANCE

Organizational performance is a recurrent theme in various domains of management, becoming an important concept in strategic management because performance improvement is the time test of any strategy (Schendel and Hofer, 1979). Based on the perspective of organizational effectiveness, Venkatraman and Ramanujam (1986) circumscribed the concept of organizational performance. According to the authors organizational performance is a subset of organizational effectiveness. The narrowest conception of organizational performance considers the use of financial indicators (e.g., sales growth, return on investment and return on equity) while the broader concept of organizational performance includes emphasis on indicators of operational performance (i.e.,

non-financial market share, customer loyalty, brand image, tire with long suppliers, etc). We consider in our study both aspects of performance (i.e., financial and operational indicators).

## 2.8 VALUE CREATION

Intellectual capital refers to the intellectual assets from a strategic and global perspective (Viedma, 2002). We argue that, from a strategic perspective, intellectual capital is used to create and apply knowledge to enhance firm value. Value creation is at the heart of strategic management and the rationale of intellectual capital is its ability to create value. Thus, intellectual capital and strategy are intricately woven. In this sense, a perspective based on the intellectual capital provides a more holistic view of the firm and its value, driving and nurturing the strategy. Nevertheless, given the uniqueness of each firm's configuration of knowledge characteristics and the idiosyncrasies of the firm's history, it does suggest that there are a variety of routes to success.

Intellectual capital is a matter of creating and sup-porting connectivity between all sets of expertise, experience and competences inside and outside the organization. The "value platform" model explains in an illustrative way the importance of a balanced intersection between the three dimensions. The contribution of this model is to show that: (i) the organizational value is created in the interaction of the three dimensions and; (ii) the intersection area increases, as the three dimensions interact.

## 2.9 INDIVIDUAL CAPITAL

### 2.9.1 Individual experience

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

Lu *et al.* (2009) in their "Ability & Efficiency of Individual experience in Taiwan's Semi-Conductor Manufacturing Companies" discuss the importance of adding on the company value through managing individual experience in intensively competitive environment. Using non-parametrical boundary methods of data development analysis they concluded that performance of the individual experience must be regarded as the key element of achieving broader innovations and gaining competitive advantages.

### 2.9.2 Social network

Chang *et al.* (2008) in their "The Effect of Alliance Experience and Intellectual Capital on the Value Creation of International Strategic Alliances" used an example of US companies to study the effects of social network and experience of unity, and the counteraction of these two on creating international strategic unity values. They concluded that the companies with higher levels of social network gain larger wealth interests. There is also a positive and significant counteraction between social network and experience of unity. Muammer and Sitki (2008) in their "Impact of social network on Exportation Performance: Research on the Turkish Automotive Supplier Industry" stress that the social network in a concept indicating that nonfinancial capital creates value more than financial capital. Therefore, business companies can create more value through developing employee social networking. The authors, aiming to determine the effects of accumulating social network of the companies on the export performance of Turkish automobile parts industry, studied 107 companies active in this field and concluded that accumulating social net work has a remarkable effect on export performance of the companies. Their research specifically indicated that export performance of the business companies enjoying larger social network in terms of supplier, customers, and clients, improve better than the other companies. Numerous evidences show that there is a positive relationship between the social network and performance of the companies.

### 2.9.3 Individual skills

Bontis (1998) and Bontis *et al.* (2000) researches in Malaysia show that there is a positive correlation between the individual skills and performance of the industries. Individual skills, regardless of the nature of the industry, affect the performance of the company.

Drucker (1999) in his study in the Spanish manufacturing industries found that most of the manufacturing companies that have employed the skilled work force had better performance than those that had semi-skilled and non-skilled employees. John Kenneth Galbraith in 1969 (Feiwal, 1975; Nick, 1998), in their study on the performance of the manufacturing companies in the Portuguese state, concluded that most of the companies with skilled workforce were performing better in the market than the companies with unskilled workforce. Roos and Roos (1997) in their study on productivity and competitiveness on the global market found out that the organizations that employed skilled workers had an edge over the companies with unskilled workforce.

### 2.9.4 Structural capital

Structural capital is important, because the market value and price of the company stocks do not depend only on the tangible properties; they rather depend on intangible properties such as the sum of patents, concepts, computer and management systems, relationship with customers and suppliers which involve the brand, reputation and trademarks.

### 2.9.5 Sum of patents

For example Lev (2001) findings show that about 80% of the companies' market value is affected by the market value of their sum of patents. Kujansivu and Lönnqvist (2005) evaluated the concepts of the 11 sizable industries in Finland. The results showed that the welfare companies have benefited from their concepts more than the others. Chen (2005) measured the patterns in Malaysian banks. This research showed that "Hong Kong Bank" despite of having less physical capital than "May Bank", acted as the most efficient local bank due to enjoying a bigger coefficient of patterns. Appuhami (2007) evaluated the effects of the computer and management systems on Thailand's stock market. The results showed that there is a significant relationship between the companies' computer and management systems and growth of their stocks. Chin *et al.* (2005) studied the relationship between the policies, market value, and financial performance of Taiwan's stock brokers, and applying the regression model showed that increasing policies of the companies improves the financial performance and increases their market value.

Findings are indicative of the importance of trademarks approaches as means of confronting new challenges in the public sector. The experience achieved through case studies provides a practical support. This study provides a ground to understand how Spanish public organizations measure and manage their trademarks. In this sense, the first step is defining and promoting strategic goals of the organization and identifying important intangibles related to these goals. After that, a series of indexes is defined and developed for each intangible. State director's deal with intangible concepts; yet, there is no orderly method for identifying, measuring, and presenting such concepts.

## RESEARCH DESIGN AND METHODOLOGY

### 3.0 INTRODUCTION

The chapter discusses the research methods adopted when conducting the study. Why the design was applicable.

### 3.1 RESEARCH DESIGN

The research team adopted qualitative research in investigating the effect of performance management systems, employee motivation and job design on employee commitment to the organization. Qualitative research is concerned with offering specialized techniques for obtaining in depth responses about what people think, do and feel (Mugenda, 2006). It enables researchers to gain insights into attitudes, beliefs, motives and behaviors of the target population and gain an overall better understanding of the underlying processes. The research is based on an initial literature review followed by in depth data collection.

### 3.2 RESEARCH SAMPLE

The research team used purposive sampling where the aim was to find data whose experience and context enables them to give informative and knowledgeable insights on the topic of the research.

A few empirical studies on the related topics (effect of motivation on performance, impact of job enrichment, rotation and enlargement on employee satisfaction) were chosen as the research sample having the same outcome as employee commitment.

## RESEARCH FINDINGS AND RESULTS

### 4.0 INTRODUCTION

Chapter four is about the information collected from the study in various books, journals, news papers, articles, etc. it is the findings of the study, trying to answer questions that relates to the objectives raised in chapter one.

From the findings in the empirical study, the following information was evident:

#### 4.1 RELATIONSHIP BETWEEN INTELLECTUAL EXPERIENCE AND PERFORMANCE

Bontis' (2001) pointed out that, intellectual experience helps to sustainable competitive advantage. Chaharbaghi and Cripps (2006) in their study concluded that individual experience is the major sustainable motion power of the organizational performance that reflects the real value of the organization better than anything else. Kujansivu and Lönnqvist (2007) in an article titled "Research on Value of Efficiency of Individual experience" explained that the individual experience is critically important for competitiveness of the companies, regardless of the type of the industry; it is even more important for knowledge based companies, as their resources are mostly intangible.

Lu *et al.* (2009) in their "Ability & Efficiency of Individual experience in Taiwan's Semi-Conductor Manufacturing Companies" found out that the importance of adding on the company value through managing individual experience is to intensify competitive advantage.

#### 4.2 RELATIONSHIP BETWEEN EXTERNAL STRUCTURE AND PERFORMANCE

Pew *et al.* (2007) studied the relationship between the relationship with customers and financial performance in Singapore's stock market based on three financial indexes (interest of each share, shareholders' return rate, and annual return rate). The results showed that there is a positive relationship between the good relationship with customers and the financial performance. There is also a significant difference between the coefficients of relationship with suppliers in different industries. Yalama and Coskun (2007) studies show that the efficiency of the value-added intellectual capital has an effect of 61.3% on profitability of banking companies in Istanbul stock market. Also, Kamath and Bharathi (2008) showed that amongst all the elements of intellectual capital, human capital has a major effect on profitability, efficiency, and value of pharmaceutical companies in India. Chen *et al.* (2004) showed that there is a relationship between brand, and the business performance of the companies. Using multi-variable regression, Wang (2008) proved that there is a positive relationship between the external structures and the market value of American electronic companies. Yolanda (2010) conducted a research titled "trademarks models in Spanish public sector" in 2010, aiming to help public organizations in the process of developing their capability of identifying, measuring, and managing their intangible properties.

#### 4.3 RELATIONSHIP BETWEEN SOCIAL NETWORK AND PERFORMANCE

From the empirical literature study, Chang *et al.* (2008) in their "The Effect of Alliance Experience and Intellectual Capital on the Value Creation of International Strategic Alliances," concluded that the companies with higher levels of social network gain larger wealth interests. Muammer and Sitki (2008) in their "Impact of social network on Exportation Performance: Research on the Turkish Automotive Supplier Industry" stressed that the social network in a concept indicated that nonfinancial capital creates value more than financial capital. Therefore, business companies can create more value through developing employee social networking.

#### 4.4 RELATIONSHIP BETWEEN INDIVIDUAL SKILLS AND PERFORMANCE

From the empirical literature, Bontis (1998) and Bontis *et al.* (2000) researches in Malaysia showed that there is a positive correlation between the individual skills and performance of the industries. Individual skills, regardless of the nature of the industry, affect the performance of the company. Also Drucker (1999) in his study in the Spanish manufacturing industries concluded that most of the manufacturing companies that have employed the skilled work force had better performance than those that had semi-skilled and non-skilled employees. John Kenneth Galbraith in 1969 (Feiwal, 1975; Nick, 1998), in their study on the performance of the manufacturing companies in the Portuguese state, concluded that most of the companies with skilled workforce were performing better in the market than the companies with unskilled workforce. Roos and Roos (1997) in their study on productivity and competitiveness on the global market found out that the organizations that employed skilled workers had an edge over the companies with unskilled workforce.

#### 4.5 RELATIONSHIP BETWEEN STRUCTURAL CAPITAL AND PERFORMANCE

Structural capital is important, because the market value and price of the company stocks do not depend only on the tangible properties; they rather depend on intangible properties such as the sum of patents, concepts, computer and management systems, relationship with customers and suppliers which involve the brand, reputation and trademarks.

#### 4.6 RELATIONSHIP BETWEEN SUM OF PATENTS AND PERFORMANCE

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#### 4.7 RELATIONSHIP BETWEEN EXTERNAL CAPITAL AND PERFORMANCE

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## 5. CONCLUSION

The finding from the empirical literature reviewed, showed that the intellectual capital are of paramount importance in the organizational performance in the manufacturing sector. The information obtained in the study showed that there is positive relationship between individual capitals which includes: employee's ability to take actions under various situations which involves explicit knowledge, skills, experiences, value-related judgment, and social network.

The study also pointed out that there is positive relationship between internal capital/competence with organizational performance in the manufacturing sector. The elements in the external competence considered were: sum of patents, concepts, patterns, computer and management systems. The result showed that the organizations that put into consideration these factors yield better performance than those that do not.

The other variable that was investigated was external capital/external structure which consisted of relationships with customers, suppliers, brand, reputation and trademarks. The findings indicated that the organizations that embrace good customers and suppliers relationship happened to perform better than those

that did not. The organizations with outstanding brands, good reputation in the market place performed better than the rest and the institutions with well established trademarks performed better than those that have not got recognition in the market. In conclusion therefore we may confidently say that organizations in order to gain competitive edge over their competitors, they must embrace intellectual capital in order to survive in the current turbulent market.

## 6. RECOMMENDATIONS

Since the reviewed literature was from European countries, the replica of the study should be done in African nations particularly in Kenya. The management should embrace intellectual competence in order to improve the organizational performance in the market.

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