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Intellectual Capital and Organizational Organic Structure How are these Concepts Related?

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ABSTRACT

This study seeks to investigate the relation between organizational organic structure and intellectual capital improvement. Researches show that the organic structure and intellectual capital have a strong relationship but this relationship has not been examined systematically. This study reviews the important theoretical work in both streams of research, highlighting the fundamental similarities and differences. Models of intellectual capital are compared and the distinction between social, human and organizational capital is examined. The nature of organizational organic structure is presented. We then examined the relation between organic structure and intellectual capital improvement. The results support that organic structure has a positive impact on intellectual capital. Therefore, the organic structure can improve intellectual capital in the organization. This study helps managers to design flexible and dynamic organizational structure to enhance the intellectual capital in the organization and increase the ability to compete.

Key words: Organic structure, intellectual capital, intangible assets

INTRODUCTION

In contemporary management theory and practice, knowledge is viewed as the most important property of an organization (Akhavan *et al.*, 2009). The increasing role of knowledge based sectors on one hand and the ever increasing depth and breadth of global competition has heightened this trend. So, today, the KM discourse is one of the top priorities of research and also practice (Bagherzadeh *et al.*, 2010). Knowledge Management is the strategic efforts of organizations to gain a competitive advantage and using intellectual assets and resources which exist in employees and clients (Akhavan *et al.*, 2010). Knowledge is recognized as a sustainable strategic resource to acquire and maintain competitive advantages (Barney, 1991; Drucker, 1985; Grant, 1991). In the knowledge economy, intellectual capital is the most important assets of organizations (Amiri *et al.*, 2010). The management of IC impacts the business performance. Knowledge is the basis of IC and is therefore at the heart of organizational capabilities. The need to continuously generate and grow this knowledge base has never been greater. Organizational capabilities are based on knowledge. Thus, knowledge is a resource that forms the foundation of the company's capabilities. Capabilities combine to become competencies and these are core competencies when they represent a domain in which the organization excels (Prahalad and Hamel, 1990). From a strategic perspective, IC is used to create and enhance the organizational value and success requires IC and the ability to manage this scarce resource controlled by a company. From another point of view, IC measurement

focuses on constructing an effective measurement model, in which financial and non-financial indices are combined together to reflect thoroughly a company's operations under the influence of knowledge economy and to offer more accurate information for knowledge management (Chen *et al.*, 2004).

Companies that measure, report and manage their intellectual capital effectively have a competitive advantage because they have identified all the assets at their disposal (tangible and intangible) and are thus in a position to operate at their full potential by making maximum use of their asset pool. In addition, understanding the real value of all assets provides a more accurate reflection of the worth of a company, which supports the corporate goals of transparency to shareholders, potential investors and market analysts. At the international level, it is accepted that there are three basic components of intellectual capital:

- Human capital
- Structural capital
- Relational capital

In a wide sense, these represent all expressions of a firm's knowledge stocks. This triple nature of intellectual assets has been revisited by different lines of research are trying to reconcile the concept of intellectual capital. In present research, based on the dominant stream, we adopt these basic three components of intellectual capital:

- Human capital, which includes values and attitudes, aptitudes and know-how
- Structural capital, that contains both organizational and technological elements that pursue integration and coordination within the firm
- Relational capital, which gathers the value of the relationships that the firm maintains with external agents (business activity close by or with other more distant social agents) (De Castro and Lopez-Saez, 2008)

Researches show that the Intellectual capital is affected by organizational structure in organization (Wang and Ahmed, 2003). Therefore, we need to examine the effects of different types of structure which directly affect on intellectual capital management. Indeed, the hierarchical functional structure hinders flow of information, whilst excessive specialization of work processes deters integration of expert knowledge and speedy response to the competitive environment (Cross, 2000). As the organization size increases, the side effects grow and it becomes difficult to exert control and influence for effective organizational functions. This in turn leads to development of decentralization as a solution for effective control. The common trajectory of structural transition depicts a scenario in which hierarchical structure is giving way to flatter and more flexible structures in the post-modern world of business (Piercy and Cravens, 1994), therefore calling for the rise of organic structure. As a result, the organic structures improve intellectual capital and make competitive advantage in the changing environment.

Therefore, it is necessary for the organizations to recognize the appropriate structure for enhancing knowledge flow, knowledge sharing and thus, increasing intellectual capital in organization. In order to examine the effects of organic structure on intellectual capital improvement, we have reviewed the literature of intellectual capital, organizational structure and relationships between these two concepts. This helps companies to adopt the best organizational structure for retaining, using and improving intellectual capital.

Main components of intellectual capital and competitive advantage: Although, for a long time it has been recognized that economic wealth comes from knowledge assets, i.e., intellectual capital and its useful application, the emphasis on it is relatively new. Managing the intellectual capital of the firm has become one of the main tasks on the executive agenda. Nevertheless, this study is especially difficult because of the problems involved in its identification, measurement and strategic assessment. In this situation, the models of intellectual capital become highly relevant, because they not only allow us to understand the nature of these assets, but also to carry out their measurement.

Several contributions have provided different frameworks for classifying the different components of intellectual capital, as well as for establishing series of indicators for intellectual capital measurement. Thus, according to the most theoretical proposals, in a first step, three main components can be found:

- Human capital
- Structural capital
- Customer or relational capital

Nevertheless, a more detailed classification is needed in order to reach a better understanding. In this sense, Brooking (1996) highlights the differences between intellectual property assets (i.e., focused on technological knowledge) and infrastructure assets (focus on organizational knowledge) and gives a broader concept of market assets (which include customer assets). Other intellectual capital proposals include five components:

- **Human capital:** Makes reference to the tacit or explicit knowledge which people possess, as well as their ability to generate it, which is useful for the mission of the organization and includes values and attitudes, aptitudes and know-how
- **Technological capital:** Refers to the combination of knowledge directly linked to the development of the activities and functions of the technical system of the organization, responsible for obtaining products and services
- **Organizational capital:** The combination of explicit and implicit, formal and informal knowledge which in an effective and efficient way structure and develop the organizational activity of the firm, that includes culture (implicit and informal knowledge), structure (explicit and formal knowledge) and organizational learning (implicit and explicit, formal and informal renewal knowledge processes)
- **Business capital:** Refers to the value to the organization of the relationships which it maintains with the main agents connected with its basic business processes (customers, suppliers, allies, etc.)
- **Social capital:** The value to the organization of the relationships which it maintains with other social agents and its surroundings (De Castro and Lopez-Saez, 2008). In this research, we consider the most popular components of intellectual capital in the literature. These components include: human capital, structural capital and customer capital

HUMAN CAPITAL

Human capital presents the individual tacit knowledge embedded in the mind of the employees. Human capital is important as the foundational source of innovation, strategic renewal of a

Table 1: The indices of human capital (Chen *et al.*, 2004)

Indices	Discription
Employees' competence	Strategic leadership of the management
	Qualities of the employees
	Learning ability of the employees
	Efficiency of employee training
	The employees' ability to participate in policy making and management
Employees' attitude	Training of key technical and managerial employees
	Identification with corporate values
	Satisfaction degree
	Employees' turnover rate
	Employees' average serviceable life
Employees' creativity	Employee's creative ability
	Income on employees' original ideas

company and the company can thus realize and create value in the knowledge-based economy. Human capital can be defined as a combination of employee's competence, attitude and creativity (Table 1).

Employees' competence is the hard part of IC. It includes employee's knowledge, skills, talents and knack, of which knowledge and skill are uppermost. Knowledge, which consists of technical knowledge and academic knowledge, is obtained mainly through school education and is thus theoretical. Skills, the employee's capability of accomplishing practical assignments, are obtained primarily through practice, especially the tacit skills that cannot be literally expressed, even though it can also be developed through school education. Employees' attitude is the soft part of IC, including their motivation for work and satisfaction from work. It is regarded as the prerequisite for employees to give full play to their competence. Employees' creativity enables them to use their knowledge elastically and to make innovations continuously. It is therefore one of the key factors in developing the IC of an enterprise (Chen *et al.*, 2004).

STRUCTURAL CAPITAL

Structural capital deals with the system and structure of an enterprise. It is the business routines. An enterprise with strong structural capital will create favorable conditions to utilize human capital and allow human capital to realize its fullest potential and then to boost its innovation capital and customer capital. In detail, structural capital can be classified into company culture, organizational structure, organizational learning, operational process and information system (Table 2).

A company's culture is the values, faith and behavior criterions approved and shared by all the staff. Values are what a company regards as the most important to its business, employees and customers. Faith refers to an employee's attitude towards him/herself, his/her company and customers. Meanwhile behavioral criterions are the unwritten rules emphasizing such matters as employees' appearance and cooperation with one another. Company culture under the guidance of a favorable managing philosophy is a valuable asset. Only under the strong culture can a company give full play to its employees' competence and motivate them to serve the company and customer heart and soul.

Organizational structure is the power and responsibility structure formed in the managing process. This power and responsibility structure can find expression in the policy-making structure,

Table 2: The indices of structural capital (Chen *et al.*, 2004)

Indices	Discription
Corporate culture	Construction of company's culture Employee's identification with company's perspective
Organizational structure	Clarification of relationship among authority, responsibility and benefit Validity of enterprise controlling system
Organizational learning	Construction and utilization of inner information net Construction and utilization of company repository
Operation process	Business process period Product quality level Corporate operating efficiency
Information system	Mutual support and cooperation between employees Availability of enterprise information Share of knowledge

the leading structure, the controlling structure and the information structure. Organizational competence is the result of the perennial learning and accumulating and it is becoming one of the most important core competences of a company. It is affirmed that in the twenty-first century the only way for a successful company to maintain its competitive excellence is to be quicker in learning than its competitors (Chen *et al.*, 2004).

The operational process, which ensures a company to complete its various operational tasks, is the most effective working methods and processes after a long-term accumulation and deposition. The information system includes the storage, disposal and transmission of the inner information of a company. A favorable information system enables a company to quicken the flow of the inner information, heighten the operational efficiency and hasten learning within the company.

CUSTOMER CAPITAL

Customer capital, an essential part of IC, is the value embedded in the marketing channels and relationships that an enterprise develops by conducting business. Compared with human capital and structural capital, it more directly affects the realization of company's value and is increasingly becoming the critical factor. Claes Fornell, a professor of Michigan University, found that the satisfaction of customers could maintain the business relationship, decrease the elasticity of product price and improve company's prestige (Fornell, 1992). In this study, customer capital is classified into basic marketing capability, market intensity and customer's loyalty (Table 3).

The basic marketing capability is the groundwork for a company to manage its human capital. To increase market intensity and customer's loyalty, a company should first enhance its basic marketing capability, such as the serving capability and the capability of collecting and utilizing customers' data. Market intensity, the ultimate expression of customer capital, refers to the current state of market building and its potential. Customer's loyalty is playing a more and more important role in today's heated competition. A company without loyal customers will have to resort to various sales promotions to allure new customers who are sometimes unprofitable to the company. Accordingly, the company should make great efforts to improve the quality of product and service pertaining to the current and future needs of customers and to enhance customer's satisfaction and thereupon customer's loyalty (Chen *et al.*, 2004).

Table 3: The indices of customer capital (Chen *et al.*, 2004)

Indices	Discription
Basic marketing capability	Construction and utilization of the customer database
	Customer service capability
	Identifying ability of customer's needs
Market intensity	Market share
	Market potential
	Unit sales to customer
	Brand and trademark reputation
Customer loyalty	Construction of sales channel
	Customer satisfaction
	Customer complaint
	Customer outflow
	Investment on customer relationship

ORGANIZATIONAL STRUCTURE

An effective organizational structure shall facilitate working relationships between various entities in the organization and may improve the working efficiency within the organizational units. Organization shall retain a set order and control to enable monitoring the processes. Organization shall support command for coping with a mix of orders and a change of conditions while performing work. Organization shall allow for application of individual skills to enable high flexibility and apply creativity. When a business expands, the chain of command will lengthen and the spans of control will widen. When an organization comes to age, the flexibility will decrease and the creativity will fatigue. Therefore, organizational structures shall be altered from time to time to enable recovery. If such alteration is prevented internally, the final escape is to turn down the organization to prepare for a re-launch in an entirely new set up.

Organizational structure depends on the product to be developed. Wheelwright and Clark define a continuum of organizational structures between two extremes, functional organizations and project organizations. Functional organizations are organized according to technological disciplines. Senior functional managers are responsible for allocating resources. The responsibility for the total product is not allocated to a single person. Coordination occurs through rules and procedures, detailed specifications, shared traditions among engineers and meetings (ad hoc and structured). Products that need a high level of specialized knowledge require a functionally organized structure.

A project organization exists of product oriented flows: project and teams. The project members leave their functional department and devote all their time to the project. They share the same location. The professionals are less specialized and have broader tasks, skills and responsibilities. The functional manager is responsible for the personnel development and the more detailed technology research in the functional groups.

KNOWLEDGE BASED STRUCTURE

In order to improve intellectual capital in organization, we need knowledge based structure. Traditional hierarchical management structures, as shown in Fig. 1, allow vertical knowledge transfer through typical chain-of-command, but inhibit horizontal knowledge transfer that must

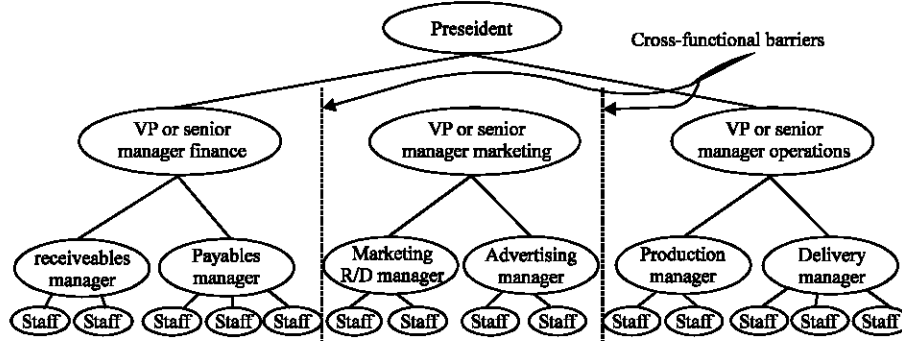


Fig. 1: Traditional organization management hierarchy (Walczak, 2005)

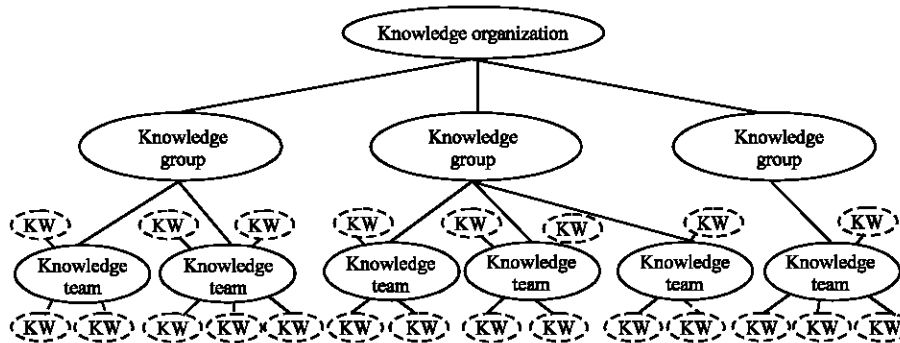


Fig. 2: Elements of the knowledge organization hierarchy (Walczak, 2005). KW: Knowledge worker

cross the organization's functional boundaries. Increasing competition and ever shortening rates of technological change necessitate better transfer of knowledge across organizational boundaries (Gopalakrishnan and Santoro, 2004). Therefore, organizations need the knowledge based structure which facilitate transferring and sharing knowledge across the organization.

A knowledge based organizational structure is shown in Fig. 2. The knowledge organization of Fig. 2 is composed of knowledge groups that are composed of knowledge teams, which are built from knowledge workers selected for participation on a knowledge team due to their tacit knowledge and skills. Ideally, the knowledge workers on any knowledge team come from different organizational (and educational) backgrounds and will bring a diversity of tacit knowledge and skills to the team.

Adoption of a new organizational structure (the knowledge organization) or managerial methodology (knowledge culture) faces resistance within the organization. Resistance to change may be minimized by reducing the perception of change for the stakeholders. Initially, the knowledge team management structure may be aligned to an existing hierarchical management structure by aligning the knowledge groups with the existing functional areas of the organization including: accounting, marketing, production and research similar to the idea of communities of practice (Walczak, 2005).

The organic structure will facilitates the development of a knowledge culture within an organization by first supporting the decision making of knowledge workers through collaboration in knowledge teams (real or virtual). Second, by facilitating the exchange of tacit knowledge through interaction in knowledge teams with other knowledge workers (Walczak, 2005). It, in turn,

leads to improving intellectual capital in organization. Therefore, a knowledge based structure is an organic organizational structure which gives managers a practical way to approach cross organizational knowledge sharing.

ORGANIC STRUCTURE

Organic and mechanistic are on different ends of the spectrum. In contingency theory, the term organic structure is used to describe an organizational structure that is designed to promote flexibility so that employees can initiate change and adapt quickly to changing conditions. This flexible structure is more like a team environment in which all the employees are able to handle any of the tasks. In contingency theory, the term mechanistic structure is used to describe an organizational structure that is designed to induce employees to behave in predictable, accountable ways. All of the employees working in a mechanistic structure have assigned duties that they must perform and are prohibited to take on additional duties unless they are told so by management.

Organic structure is widely sought and proposed, adversely to the mechanistic organization, has the least hierarchy and specialization of functions. For an organization to be organic, people in it should be equally leveled, with no job descriptions or classifications and communication to have a hub-network-like form. It thrives on the power of personalities, lack of rigid procedures and communication and can react quickly and easily to changes in the environment thus it is said to be the most adaptive form of organization. An organic organization is a fluid and flexible network of multi-talented individuals who perform a variety of tasks.

Organic organizations leads to teamwork. An organic organization is when the organization exist dependently, meaning that the organization takes into consideration the needs of their employees. Since in an organic organization the ideas and opinions of the employees are taken into consideration, this leads to group leadership and teamwork. Group leadership, is better than individual leadership because there are several people controlling the environment, instead of one person telling everyone what is expected. Since organic organizations takes into consideration the ideas of the employees this opens the doors to create teamwork among employees. The use of Organic Organizations is good because it becomes an incentive to employees to perform to the best of their ability.

Organic structure promotes a metaphor in which organizations are seen as complex and social entities featured by a collection of competing and interacting forces between individual and social forces. The organic structure has the following dimensional characteristics:

- **Flat and team- based:** There is a shift from vertical decision making to horizontal collaboration. Organization composition typically consists of top management, strategic groups and project teams
- **Divisionalized:** Departmental barriers erode to facilitate cross- functional teams and integration of specialized sources of knowledge
- **Decentralization of power and control:** Managers empower employees to proactively participate in organizational management and promote a culture of openness and trust
- **A higher level of informality:** There is freedom from rules, there are more informal, face to face communications and two loops of communications downwards and upwards, management expands to include managing people, technology, knowledge and processes and there is general encouragement of interaction, which is regarded as the main mechanism to create knowledge

Table 4: Differences between mechanistic and organic structure (Burns and Stalker, 1961)

Characteristics	Mechanistic organization form	Organic organization form
Appropriate conditions	Stable	Changing
Distribution of tasks	Specialized differentiation of functional task into which the problems and tasks facing a concern as a whole are broken down	Contributive nature of special knowledge and experience to the common task of the concern
Nature of individual task	The abstract nature of each individual task, which is pursued with techniques and purposes more or less distinct from those of the concern as a whole: i.e., the functionaries tend to pursue the technical improvements of means, rather than the accomplishment of the ends of the concern	The realistic nature of the individual task, which is seen as set by the total situation of the concern
Who (re)defines tasks	The reconciliation, for each level in the hierarchy, of these distinct performances by the immediate superiors, who are also, in turn, responsible for seeing that each is relevant in his own special part of the main task	The adjustment and continual redefinition of individual tasks through interaction with others
Task scope	The precise definition of rights and obligations and technical methods attached to each functional role	The shedding of responsibility as a limited field of rights, obligations and methods (problems may not be posted upwards, downwards or sideways as being someone else's responsibility)
How is task conformance ensured	The translation of rights and obligations and methods into the responsibilities of a functional position	The spread of commitment to the concern beyond any technical definition
Structure of control, and communication	Hierarchic, Contractual	Network, presumed community of authority interest
Locating of knowledge	Reinforcement of the hierarchic structure by the location of knowledge of actualities exclusively at the top of the hierarchy, where the final reconciliation of distinct tasks and assessment of relevance is made	Omniscience no longer imputed to the head of the concern; knowledge about the technical or commercial nature of the here and now may be located anywhere in the network
Communication members of concern	Vertical; i.e., between superior and subordinate	Lateral; i.e., between people of between different rank, resembling consultation rather than command

As companies grow further in size, in particular, as they internationalize there is a heightened and different type of demand placed upon structure in terms of control over larger geographical disperse organizations. In such environment, the organic metaphor results in the development of variations of more sophisticated, decentralized, divisional structure, such as the matrix structure, which emerged in 1970s as a hybrid of hierarchical and flatter structure (Wang and Ahmed, 2003).

Through their theory of mechanistic and organic systems (Burns and Stalker, 1961) have provided a way to understand which organization forms fit to specific circumstances of change or stability. They identified two kinds of organizational structures: mechanic (mechanistic) organizations and organic (dynamic) organizations (Ali *et al.*, 2010); these characteristics have been shown in Table 4.

Competitive advantage in the knowledge economy: As companies entered into the 1990s, knowledge became one of the most important strategic resources. Knowledge production is critical to sustaining competitive and organizational success. The organization's ability to renew and

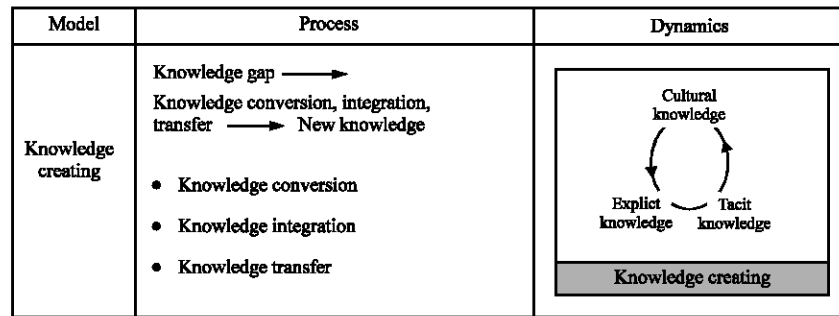


Fig. 3: Knowledge Creating (Choo and Bontis, 2002)

achieve new and innovative forms of competitive advantage becomes most important. This ability is referred to as a firm's dynamic capability. Building competitive advantage through dynamic capability requires constant knowledge flow within and outside the organization and continuously updated knowledge repository (Wang and Ahmed, 2003).

An organization has three kinds of knowledge: tacit knowledge in the expertise and experience of individuals; explicit or rule-based knowledge in artifacts, rules and routines; and cultural knowledge in the assumptions and beliefs used by members to assign value and significance to new information or knowledge. Knowledge creating is precipitated by the recognition of gaps in the organization's existing knowledge. Such knowledge gaps can stand in the way of solving a problem, developing a new product, or taking advantage of an opportunity. Organizations then create new knowledge by converting tacit to explicit knowledge, integrating and combining knowledge and acquiring or transferring knowledge across boundaries (Choo and Bontis, 2002) (Fig. 3).

In knowledge conversion (Nonaka and Takeuchi, 1995), the organization continuously creates new knowledge by converting the personal, tacit knowledge of individuals who develop creative insight to the shared, explicit knowledge by which the organization develops new products and innovations.

Tacit knowledge is shared and externalized through dialogue that uses metaphors and analogies. New concepts are created and the concepts are justified and evaluated according to its fit with organizational intention. Concepts are tested and elaborated by building archetypes or prototypes. Finally, concepts that have been created, justified and modeled are moved to other levels of the organization to generate new cycles of knowledge creation.

According to Choo and Bontis (2002), learning helps organizations to create knowledge and this in turn leads to intellectual capital improvement (Fig. 4).

Therefore, knowledge creation leads to intellectual capital improvement. Thus, one of the main preconditions for enhancing the intellectual capital is a kind of organizational structure which streamlines the knowledge transfer across the organization. Researches show that informal structure better depicts actual organizational activities and reflects dynamic interaction that is critical to knowledge creation. In the following section, we examine the characteristics of this kind of organizational structure.

Intellectual capital and organizational structure: As discussed above, the increasing demand for knowledge raises a new challenge for organizational structure. In fact, the knowledge economy makes new demands on organizational structuring based on processes. The new focus is

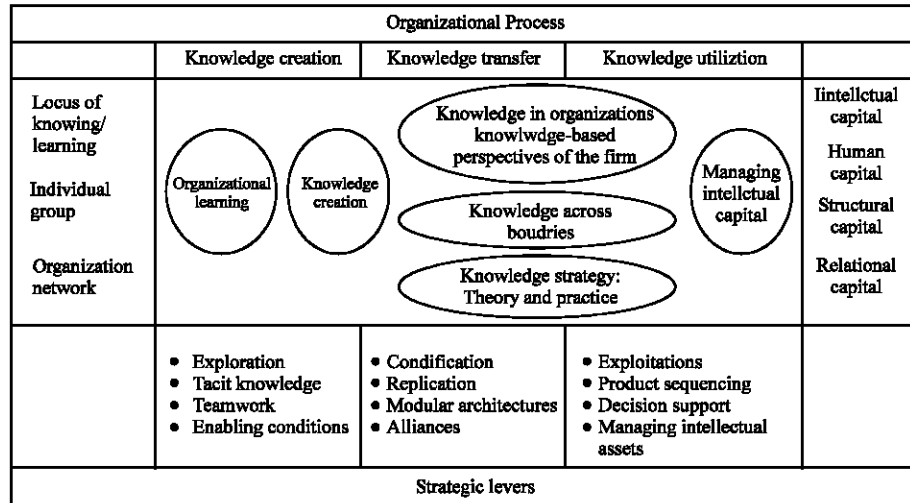


Fig. 4: A framework for strategic knowledge management (Choo and Bontis, 2002)

to develop new types of organizational forms to facilitate knowledge management, in particular knowledge flow. Effective management of knowledge demands:

- **Boundry-lessness:** Knowledge-based organizations need to break away from the restriction of spatial boundaries and build a perceptual framework bounded by organizational identity and trust. In this way, the organizational knowledge pool can expand beyond the narrow confines of a physical boundary. Doing so enables employees to access information without hindrance from formal control structure. Informal relationships play an important role in blurring the boundary
- **Fluidity:** Effective knowledge management demands a flow of knowledge, rather than a stock of it. Organizational design must smooth knowledge flow and allow knowledge to have a far greater impact on performance. Informal relationships promote a proliferation of internal and external networks to facilitate knowledge flow
- **Interactiveness:** Effective knowledge management relies to a great extent on managing tacit knowledge. Informal relations promote interpersonal, cross functional and interorganizational interaction and are the prime method of sharing tacit knowledge as well as codifying and producing tacit knowledge
- **Flexibility:** For effective production of knowledge-based outcomes, structure should be flexible rather than definite, allowing appropriate and timely restructuring of knowledge and temporary constellations of people and units to meet organizational needs. Organizations cannot thus be viewed as solid frameworks, but transient entities, created and remolded by different processes. This requirement fulfilled via informal relationships (Wang and Ahmed, 2003)

CONCLUSIONS

Intellectual capital is increasingly recognized as an important strategic asset for sustainable corporate competitive advantages. Present study provides evidence that investors place higher value on firms with better intellectual capital efficiency and that firm with better intellectual capital efficiency yield greater profitability and revenue growth in both the current and the following years.

Therefore, Entering a knowledge area, organizations will need to become more adaptable and flexible in order to enhance intellectual capital and capture opportunities in the dynamic environment.

Traditional understanding of organizational structure fails to capture essence of organizational development in the face of new challenges and demands and therefore, was not able to improve intellectual capital in organizations.

Present results underline the Importance of organic structure in improving intellectual capital and enhancing firm profitability and revenue growth. In fact, organic structure with characteristics such as flexibility and interactiveness helps employees and managers to transfer and share knowledge across the organization and increase the sustaining competitive advantages.

We conclude with a call for more research in order to develop a fuller understanding of the interaction between intellectual capital and organic structure. Our discussion here suggests that organic structure leads to new capabilities for the firm and has improved the intellectual capital by enhancing teamwork, decentralization of power and control and a higher level of informality.

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