

# Intellectual capital knowledge management: organizational value creation

Soheila Asadi

Department of Accounting, Behbahan Branch, Islamic Azad University, Behbahan, Iran

## Abstract

In the knowledge-based economy, products and organizations ensure their survival based on knowledge; the most successful organizations are those which are using these intangible assets better and faster. Studies have shown that, unlike return loss of traditional sources, knowledge is really a resource to increase the value of organizations and to gain competitive advantage and business performance. In strategic perspective, nowadays, knowledge and intellectual capital are used to create and enhance organizational value, and the success of an organization depends on its ability to manage these scarce resources. So, mental assets and the knowledge of individuals are as important as other financial and physical assets of organizations, recently. In organizations, the important matter is the role of knowledge and intellectual capital, which are trying to efficiently manage them so that in their processes they can effectively use these key capitals to get to a higher positions. This paper examined the relationship between intellectual capital and knowledge management and their roles in creating Organizational value.

**Keywords:** Knowledge management, intellectual capital, value creation.

## Introduction

In the era of ultra-competition of organizations, we are facing the environment whose characterizations are globalization and increasing complexity and dynamics. Thus, the organization in order to continue their settlements, are facing with the challenges that for getting out of these challenges need further attention to the developing and

strengthening the internal skills and abilities which is done through internal organizational knowledge bases and intellectual capital and that the organizations are using to get better performance in the business world. Knowledge and intellectual capital as a valuable strategy for achieving value and maintaining competitive advantage of organizations have been detected (Barney,1991). In this current knowledge-based world, organizational capabilities are based on knowledge and intellectual capital, and managers need to understand that what features are needed to maintain the value and competitive advantage of organizations. So, the intellectual capital and knowledge assets are becoming a strategic lever to manage the company's business performance and continuous innovation; thus, the organizations are no longer producing just products and services but should produce value-added services to stay in the new economy; and in this era, the major challenge of managers is to prepare a suitable environment for the development and growing of the human mind in a knowledge-based organizations. Knowledge management and intellectual capital have changed into the basic skills of managers in the organizations; and in the current economy, value and competitive advantage of organizations are based on knowledge and intellectual capital that are achieved by creating proper communication with customers, gaining experience in this line, and relying on organizational techniques knowledge and special skills.

“ The 21st Century is called knowledge economy, and prior to knowledge economy, the world was run based on manufacturing or industrial economy. In this economy “the factors of economic value production” were considered physical resources such as land, “labor force”, money, machine, etc. and a combination of these productive factors creat-

**Corresponding author:** Soheila Asadi, Department of Accounting, Behbahan Branch, Islamic Azad University, Behbahan, Iran. E-mail: Soheila\_asadi\_89@yahoo.com.

ed value for economic, where, as previously knowledge was not considered as a productive factor, in knowledge-based economy, knowledge and intellectual capital (IC) were considered as a productive factor of the economic value compared with physical assets.

Knowledge management is an inseparable part of the concept of intellectual capital. Ganzi (2007) distinguishes between knowledge management and intellectual capital, and believes that knowledge management is intellectual capital management. Of course, yet, the precise distinction between these two concepts, in his opinion, is hard. Capital management, as an umbrella concept, contains knowledge management. Knowledge management, in fact, is responsible for the management of intellectual capital, that, according to experts, is in contrast with intellectual capital or is its supplement.

### *History of Knowledge*

Over time and with the shaping of political and trade relations between the countries, gaining knowledge from the environment has been considered as a source to create new conditions to enhance the welfare and trade. So, efforts have been developed to expand knowledge in the form of science as developed forms such as book or the first samples of educational and training organizations. The attention of kings to the scientists in this period, and the attempt to apply them for the governance and raising the welfare of people can be taken into account as the first step towards the human capital.

Beginning with the Renaissance and the growth and spread of the approach based on humans, paying attention to the individual knowledge expanded little by little. On the other hand, paying attention to the human as the basic foundation of development in the economic and business sciences, and sociology leading up to the Industrial Revolution, helped the role of knowledge in the development of tools to create value. For example, in the early seventeenth century, the first attempts were done by William Petty to calculate the effect labor force in national wealth. This process developed with the beginning of the industrial revolution in the eighteenth century. Paying attention to the value of human capital and labor force by Adam Smith or designing human capital valuation methods by William Farr, using the production costs of parasite can be regarded as new attraction to human capital, and, consequently, creating a favorable environment for the develop-

ment of a new concept known as intellectual capital.

In the first half of the twentieth century, new economic and trade concepts were seen deeply. Because of the outbreak of World War and the economic recession, countries, especially developed countries, were to establish new economic approaches and frameworks and develop human capacities available in order to compensate damages resulting from the war. This led to intense competition to get resources and competitive markets. But with the increasing demand for physical resources and resource constraints, the availability of organizations to physical resources was limited.

The second half of the twenty century was milestone in changing attitudes and organizational performance. Proposing a theory of innovative enterprise, on the one hand, organizations that were looking for alternatives of trade at this time got new basics. On the other hand, the new requirements appeared to be more servicing that gained more added value for the organizations. Proposing new theories about the role of information in the organization and consequently the attention to the information technology and the formation of new forms of entrepreneurship, the scope of achieving and creating value opportunities for the organization developed. New forms of servicing combined with information, divided the organizations into two parts of physical and virtual. Hence, what has been known as a source of wealth for the communities or organizations experienced fundamental change and transformation and this change resulted in changes in economic and business principles in communities. This issue led to the difference between book value and market value, which increased the importance of paying attention to the intangible resources which are effective in added value beyond the usual calculations of the past. The 90s can be regarded as the beginning of wide attention to the concept of intellectual capital. Theorizing in this decade expands and the attention of organizations has been attracted.

Introducing issues of knowledge management and intellectual capital, defining new issues like customer capital, introducing evaluation models and extending the attention to the topics such as intellectual property, spiritual patenting, intellectual property, brands, trademarks are the features of this decade. In the 90s, the national attention to intellectual capital was attracted and local frameworks to

report intellectual capital was presented. The term “intellectual capital” was first developed and applied in the 80s in the field of management in an action about attention to the intangible assets of companies that increase their performance. Pioneers in this effort include: Hiroyuki Itami in 1980 in his book entitled “Equipping Intangible Assets”, Karl-Eric Suiby and Conrad Group in 1989 with their book entitled “Intangible Balance”, and Thomas Stewart in 1997 with the book entitled “Intellectual Capital”. The concept of intellectual capital, for the first time, has professionally been proposed in 1991 when the big Swedish company “Scandia” started to implement a series of innovative scientific approach to give special attention to the intangible assets. Historical development and application of intellectual capital is summarized as follows:

Prior to 1980s Mr. John Galbraith was the first to use the term intellectual capital.

Early 1980s: Publishing the book “Equipping Intangible Assets” by Hiroyuki Itami (1980); and opening the company to conduct market research of the value of human force by Brian Hall (1981).

Mid-1980s: the movement from the industrial age to the information age and creating a gap between book value and market value of companies, as well as the publication of extracting value from innovation by Bentis. Article by Debra A Midon about knowledge asset management in the twenty-first century. Also the publication of relation disconnection, growth and decline of managerial accounting by Thomas Johnson and Robert Kaplan (1987).

Late 1980s: The first attempts to compile a bill that measure intellectual capital (Roos & Roos, 1997). Also, publishing intangible balance sheet, and beginning the research on commercialization of innovations by Suibi (1989).

Early 1990s: is the first time that the role of intellectual capital management by allocating an official post is legitimate in the organization, and Leaf Edison is introduced as director of intellectual capital of Skandia. Publication of the book entitled “Knowledge Management” by Carl Suibi (1990); and the introduction of the concept of Balanced Scorecard by Kaplan and Norton.

Mid-1990s, presenting the intellectual capital in Skandia as the attached financial statements, using the audit for a comprehensive assessment of the intellectual capital position by Salmi, publishing books of intellectual capital by experts.

Late 1990s: intellectual capital became the

most popular subject of most authors, conferences, and papers.

Early 2000s:

Publishing the first scientific journal entitled Intellectual Capital.

Publishing the first Accounting Standards of Intellectual Capital by the Danish government.

Publishing the first intellectual capital report by the Union Europe.

Publishing the Book of Measurement Management, and reporting of intangible assets by different projects about management and measurement of intellectual capital has been defined and are being followed.

The role of knowledge as a key resource for organizations in particular and economic development in general has changed into a major issue. According to the ideas of Peter Drucker, nowadays, knowledge is the only source of economy, and, largely replaced traditional factors of production, namely land, labor forces, and capital; hence, added value, in most organizations, are presented as knowledge (Dehqan, 2007). The experts believe that the economy, from the state of the economy after industry, is in transition to a knowledge-based economy (Roos & Roos, 1997); therefore, by believing to this evolution and upward trend, what is important for community organizations and their members is creating process management, and getting and using knowledge effectively. Intellectual capital is the most valuable organizational assets and is the most effective competitive weapon. Organizations have concluded that the value in an organization is not only limited to tangible assets shown in their balance sheets, but these are intangible assets that have important role in the success or failure of an organization. In the knowledge-based economy, intellectual capital is used to create and increase organizational value and the success of an organization depends on its ability to manage this scarce resource. Many organizations which pursue knowledge management do not have a process to measure organizational knowledge assets and intellectual capital or the indexes that they use are very superficial and limited because the process of measurement by the index, because of the intangible nature of intellectual capital, is complex. Organizations use intellectual capitals, which is a transformed knowledge, in order to create organizational value and improve business process, and use these intangible assets in a better way. In the knowledge-based economy, products and organizations are restored

based on knowledge and if ignored, it would decay. The experts of 80s is called the decade of movement quality, the 90s as the decade of reengineering, and the current decade is called knowledge management (Bontis, 1998).

Mixed knowledge gives a fluid of new experience and information. The knowledge is created and applied in the mind of the researcher. Knowledge in organizations is not only embodied in the documents and knowledge stores, but also in work practices, organizational processes, practices and norms. This definition, from the very first, makes clear that knowledge is not simple and clear, but is a combination of several different factors. It is a fluid which also has certain structures, and ultimately it is vague and intuitive, and, therefore, it cannot easily be fit into words and offer in a reasonable definition. Knowledge exists in people and is a part of the complexity of human knowledge. Although we, traditionally, know that the capitals are concrete and clear but knowledge management cannot be easily defined. Similar to atomic particle which can be a wave or a particle, it depends on how scientists pursue it. Knowledge is imaginable as dynamic, accumulated, and static.

### *Intellectual Capital*

With the revolution of “information technology”, the formation of information and network society and the rapid development of technology, the pattern of the world economy has fundamentally changed. As a result of these developments, knowledge, as the most important capital, has replaced physical and financial investments in global economy. In a knowledge-based organization, the traditional methods of accounting, which are based on the tangible assets of the organization, were insufficient for the valuation of intellectual capital, which is the largest and most valuable intangible assets of the organizations. The new emerging field of intellectual capital is a new research area for researchers that focus on the new measurement mechanisms for reporting - important intangible variables such as human capital, organizational capital, customer satisfaction, and innovation (Bathayi, 2006).

Intellectual capital includes all intangible resources that are available to an organization and present a relevant superiority, and in a combination, are able to produce advantages for future. The collection of all the knowledge that an organization has to gain competitive advantages is called intellectual capital.

In a simple definition, intellectual capital is the difference between market value and book value of assets of an organization (Nonaka and Takeuchi, 1995). In another definition, intellectual capital is defined as follows: Intangible finance norms or assets of an organization which have important effect on the performance and other key factors of its success, which these criteria are not reflected on the balance sheet.

Intellectual capital are applied under titles such as intangible assets, knowledge-based assets, knowledge capital, information assets, human capital, and the hidden values (Bontis, 1998) and embrace innovation, ideas, basic knowledge, different production design methods, computer programs, and publications. In other words, intellectual capital includes assets which are intangible, but gradually creates wealth for the organizations. Simply, perhaps intellectual capital can be known as a knowledge package consisting of intangible and invisible resources, principles, culture, behavioral patterns, capabilities, competencies, structures, communication, processes, and the processes leading to / resulting from knowledge. The base of knowledge is on subjective impressions. So far, several models are presented from the intellectual capital in each of which different dimensions have been considered, and based on each defined index dimensions, different techniques and optimal mining strategies have been used; but in the most important model intellectual capital is divided into three components of human capital, organizational capital (structural), and relational capital (Bontis, 1998).

### *Human Capital*

Human capital represents the knowledge of an organization's individuals. Bontis believes that human capital which is as a source of innovation strategic reconstruction is important (Bontis, Dragonetti, Jacobsen, and Roos, 1999). Roos and Roos (1997) believe that employees create intellectual capital through competence, attitudes, and their mental agility. Although merit include skills and qualifications, attitude includes the behavior of staff, and mental agility makes people able to change practices and thinking in an innovative solution of the issues (Nonaka and Takeuchi, 1995).

Chen and colleagues argue that human capital as the basis of intellectual capital refers to the factors, such as skills, competencies and attitudes of employees, which results in improved performance,

attracting customers, and increasing profits. These knowledge and skills are in the employees' mind, meaning that their mind carries knowledge and skills. If the thoughtful staff are not used effectively by the organization, the knowledge and skills in their minds cannot be activated, or change into market value( Chen, Zhu and Xie, 2004).

Human capital caused that organizations, to a largely extend, rely on the knowledge and skills of the staffs to create and grow revenue, and also improve efficiency and productivity. Many sources of information can be achieved about human capital. On the basis of this information human resources can be effectively allocated within organizations and recognize skill gaps and human resource abilities easily. Moreover, human capital facilitates providing comprehensive information for investors or potential investors. Despite the increasing importance of human capital, more organizations, traditionally, report the money they spend for human capital in the financial statements as an expense and not an investment.

Human capital relate to factors such as, staff knowledge, and their abilities and skills, and also their behaviors about reward functions that customers are willing to pay for and the profit of organization arises from. Additionally, employees with the skills and knowledge are ahead of all employees. It includes the knowledge and skills. If an open-minded employee fails to service the firm, his skills and knowledge remains inactive. Structural capital, customer capital, innovation capital are dependent to human capital, in a way that, on the one hand, human capital through changing these three capitals changes knowledge to the market value, and, on the other hand, converts the non-financial data into useful outputs and beneficial.

### *Capital structure*

Generally, human capital return to their homes each night. The task of managers is to build knowledge assets which do not return home at night. This can be achieved through structural capital including technologies, data networking, publications, processes and organization.

Capital structure creates an environment by which the knowledge is created and ready to enter the market (Roos& Roos, 1997). Creating a knowledge bank makes it possible to use the knowledge again. Structural capital of an organization should create intellectual capital assets. For example, where to look for knowledge or who has the best skills.

Capital structure relates to mechanism and structure of a company which helps employees in efficient intellectual functioning and increasing performance levels of companies. Structural capital, on the one hand, is the off shoot of human capital, because human capital is the determining factor in the organizational form; on the other hand, structural capital and human capital are independent of each other. For example, organizational and cultural structure of a company can have basic and specific independent of other structures. Apart from structural capital, human capitals are able to establish and develop companies and use the innovation capital and customer capital in a consistent purpose.

### *Innovation Capital*

Askandia's model to innovation capital pays attention as part of the structural capital that in the new economic era has less been fulfilled than real. In this era, innovation has been presented as a key factor for the long term competitive advantage of companies. Economic growth in economically developed countries has been mostly affected by innovation than investment. Therefore, as an important factor, innovation is not one of the subjects of structural capital, but in fact, is a major tributary of the intellectual capital; on the other hand, the innovation capital is not created itself because the origin and development of it is based on the similar influence of human capital and structural capital. Innovative takes place by a combination of superior staffs, rational communication, culture and technology. On the other hand, innovation capital can be a stimulus for the growth of customer capital. The life cycle of production gets shorter and shorter, and the companies are to be invincible in this fierce competition that they would be able to continuously develop new products to satisfy the demand of customers.

### *Relational Capital*

Relational capital acts as a bridge and accelerator of intellectual capital operations which is a primary, essential, and determining factor in changing intellectual capital to market value, and as a result is essential and determining in the business performance of the organization. Market value or organizational performance cannot be obtained without customer capital. Customer capital has a direct relation with business performance. To attract customer capital, we should rely on the support from

human capital, structural capital, and innovation capital.

Customer capital is the most important component of intellectual capital in creating added-value and includes internal and external relationships with beneficiaries of the organization, and is a determining factor in changing intellectual capital to market value (Nonaka and Takeuchi, 1995). Distribution channels and customer satisfaction and loyalty are the most basic factors to create added-value in the organization. These types of capital exist in connection with the suppliers, retailers, wholesalers and especially customers. Customer loyalty can be considered as part of this type of capital. The concept of relational capital was initially known by the name of customer capital, and was gradually developed to relational capital (Roos & Roos, 1997) which included the relationships with other stakeholders and market information that are needed to attract and keep customers (Nonaka & Takeuchi, 1996). This capital consists of all assets that manage the company's relationship with the environment, and includes the relationship with the customers, shareholders, suppliers, government, state agencies, and competitors. Though the most important aspect of relational capital is customer capital, just this aspect should not be considered.

### **Knowledge Management**

Paying attention to the field of knowledge management in both academic and business areas is growing. This issue, regarding the growing number of published books and articles in the field of knowledge management, is well-understood (Sinotte, 2004). Studies in Europe show that in 2000, 80 percent of the largest companies around the world have used knowledge management.

Knowledge management is strategies and processes that are able to produce and create knowledge to meet the expectations of customers and organizations, customers, and users in the whole organization. Knowledge management is a broad process that considers the identification, organization, transferring and correct usage of internal information and experience of the organization. Nowadays, knowledge is considered the most important asset of organizations; so, knowledge management is the challenge of discovering personal wisdom and changing it into an information subject so that it can be stored in a database, exchanged with others, and used in the process of daily activities.

Knowledge management requires knowledge-

able and effective leadership in organizations. The most important elements to cause the progression of knowledge management are innovation and creativity. To develop knowledge management in the organization, some changes which cause interaction and reconstruction of knowledge should be systematically encouraged and supported.

Knowledge management is a collection of processes that controls the creation, dissemination, and usage of knowledge. As it is clear in the definition, knowledge management encompasses broad issues. In other words, knowledge management is a systematic approach to creation, receiving, organizing, accessing, and using knowledge and learning in organizations. Knowledge management, in organizations and companies, helps to improve decisions, greater flexibility, increase profits, reduce workload, increase productivity, create new business opportunities, cost reduction, greater market share, and improve employee motivation. Knowledge management can be used for various activities such as, normal, logical, complex, and unexpected ones.

In this context, America Productivity and Quality Center (APQC) defines knowledge management as identification strategies and processes, acquiring and distributing knowledge to enhance the competitive strength of the organization.

Explaining the necessity of using knowledge management is well described by Nonaka (1994) as one of the pioneers in this field:

“In an economy where the only certainty is uncertainty, one reliable and sustainable source to get competitive advantage for the organizations is knowledge. Successful companies are companies that constantly generate new knowledge and release it all over the organization and are constantly looking for new technologies and products.”

In summary, four main factors are important in the creation of knowledge management which include:

1 - Transforming the industrial business model that the capitals of an organization were essentially national and tangible capitals (production facilities, equipment, land, etc.) to the organizations whose main asset was intangible and is tied to the knowledge, expertise, abilities, and management for making the employees creative.

2 - Increasing the size of information, its electronic storage, and increasing the access to information generally added the value of knowledge because it is only through knowledge that this in-

formation gets value, and knowledge also has a high value because it is closer to the action. Information itself does not make the decision, but converting data into knowledge depends on human, thus leads to the action.

3 - Changing age pyramid of the population and demographic characteristics which has been pointed out in few resources. Many organizations have found that a large amount of important knowledge is being retired. Growing awareness exists that if the appropriate measurement and action is not taken, the bulk of this knowledge and expertise get out of the organization.

4 – Specialization of activities may have the risk of losing institutional knowledge and expertise through transferring or dismissal of the staffs. Initially knowledge management was only viewed from technological dimension, and it was thought as a technology; but gradually organizations found that in order to use the skills of employees, more than management information is necessary. Humans, in the case of electronic and technology dimension, are laced in the center of the development, implementation, and success of knowledge management, and this human factor is the distinguishing aspect of knowledge management from the similar concepts such as information management (Roos, Roos, Dragonetti & Edvinsson, 1998).

Knowledge management requires determining the opportunities and threats facing the organization. After that determining the knowledge gap of organization, which is a proof of distance between the status quo of organizational knowledge and desirable knowledge which is necessary for the organization, identifies the knowledge gap of organization, the implicit and explicit knowledge, – which is in the organization, should be identified and organized, and can be used and transferred properly. Knowledge management, like intelligence in financial issues, is a skill, and leaders will be successful in competitions that learn and develop this skill. Knowledge can be managed in different ways: the creation of knowledge networks, mobility of people in these networks and engaging managers and employees. Human element plays a major role in the process of knowledge management and knowledge-based organizations. The ability of people to work in new conditions and making use of existing knowledge and its transmission are determining factors in the implementation of knowledge management in the organization. The capacity of people in benefiting from the existing knowledge for the continu-

ous improvement of job performance and becoming in a learning organization is highly important. Learning organizations are continually improving their capabilities in the areas of creativity, innovation, and change which are possible mainly through training and productivity of human resources.

They use the existing knowledge in their organizations. Indeed, knowledge-based business environment in many countries requires a new model and entitlement that includes intangible factors of organization. In this situation, new fields in today's world are no longer the main economic resources, capital, natural resources, labor, etc. But the main economic resources will be knowledge. After twentieth century which was the century of industrial economy, the twenty-first century is the century of knowledge and information economy. In industrial economy, the factors of the production of economic wealth have been a series of physical and tangible assets such as land, labor force, money, etc. and by the combination of these economic factors, the wealth was produced. In this economy, the use of knowledge as a factor of production has had a little role, but in the knowledge economy, knowledge or intellectual capital, as a factor of wealth production, compared to other Tangible and physical assets, are more preferred. In the knowledge economy, unlike the industrial economy, intellectual assets especially human capital are considered the most important asset of the organization, and the potential success of organizations roots in their intellectual ability. Therefore, how to manage intellectual capital within the organization and their role to get competitive advantage can play a significant role in advancing organizational goals (Wiig, 1997).

Knowledge management can act as part of the management process that concentrate on the systematic analysis and planning, creation, accumulation, storage, and application of knowledge, and tries to change human capital to structural capital in order to create competitive. Knowledge management is a task of strategic management of an organization. The main goal of knowledge management is to change human capital of an organization into structural capital.

### *The Relationship between Intellectual Capital and Knowledge Management*

The relationship between intellectual capital and knowledge management is of vital importance to the organization. These two through the significant overlapping which exists between them

complete each other. This overlapping largely depends on the plans and priorities of the organizations. Knowledge management has an important role in the process of development and efficiency of the intellectual capital, and focuses on facilitating and managing knowledge-oriented activities to create a knowledge friendly environment for the growth of intellectual capital, and increasing intellectual capital through relating it with knowledge management is possible when the existing knowledge processes are managed systematically and objectively in order to have systematic approach to knowledge management; also, they should be seen beyond the scope of the traditional boundaries, and different factors which are important in identifying intellectual capital and their components and activities associated with the effective knowledge management operation should be accounted which requires to take into account the creation of solidarity among technologies, people, and systems with a special focus on individuals. This approach requires measurement and management and to align intellectual capital intellectual capital with knowledge management through innovation; the discovery of new ideas continuously create superior products and services, causing the continued and steady relation with customers and customer capital, and, therefore, gets effective knowledge from anywhere. Knowledge Management, through changing human capital into organized intellectual assets, creates value for the organization.

Evidences show that these two are mutually complementary. In terms of the area of study it can be said that knowledge management and intellectual capital management have almost all relevant aspects of organizational activities; both have a general range of activities within the organization, from creating knowledge to knowledge usage. Intellectual capital has been presented in the level of strategic and knowledge management (Stewart, 1991) and focuses on the mining and creating value from the heart of the organization assets. On the other hand, the goal of intellectual capital is to create and use intellectual capital and improve skills and abilities to create value for the organization from the strategic perspective. But knowledge management concentrates on the operational activities and tactical knowledge-oriented performances and relates with the details of knowledge-oriented activities so that they can facilitate creating, changing, and using intellectual capital, and both of these are building stones for the management of an organization in

the 21st century, and should be integrated with each other to enhance the effectiveness.

### *Knowledge Management as a Tool to Change Intellectual Capital into Competitive Advantage*

In many recent studies in the field of strategic management, the role of knowledge management as the basis for competitive advantage → has been emphasized. Many factors affect on the competitiveness → of the organizations such as, developing the potential abilities of the organization and producing products or services distinguished from those of competitors.

Despite numerous studies show that knowledge has been known as a resource for the competitiveness, it is still not well managed in the organizations, and there are few percentage of the managers of organizations who think that knowledge is well managed in their organizations. →

A group of experts on competition → believe that a company can win a competitive battle when it has better knowledge than that of its competitors (Sinotte, 2004). And, from this perspective, competitiveness basically has root in the company and its knowledge. Knowledge is a good source to get competitive advantage because when a company has appropriate knowledge, it can use this knowledge to reduce the final cost → In many areas, according to Polanyi (1966) and regarding the role of knowledge in increasing competitiveness, we should distinguish between explicit knowledge and implicit knowledge.

Explicit knowledge can easily be copied by competitors, while implicit knowledge which is related to the source of competitive advantage is not like that. Implicit knowledge refers to a piece of individual skill that is not easily being public, and cannot easily be copied or encoded. Implicit knowledge is usually dependent on the content in which some samples like the knowledge to solve problems in a particular organizational content can be noted. It means that although knowledge exists in individuals, it can be detailed within the organization. Since imitating and copying of the implicit knowledge is difficult and somewhat impossible, this kind of knowledge as part of the organization becomes a source of sustainable competitive advantage. Because the cumulative nature of knowledge has been formed from the experience and time and that the source stops imitating and is a special source for the organization.

The school of management is based on the con-



siderable empirical knowledge. Studies show the direct impact of knowledge of employees on competitive advantage, sales growth (Edvinsson, 1997) market share, profitability and added-value of each employee. In knowledge-based view, sustainable competitive advantage is gained only through knowledge for the organization, because the amount of knowledge outside the organization is much more than the knowledge within the organization, and organizations are able to take steps, through learning more and more, in order to achieve sustainable competitive advantage (Sinotte, 2004).

Knowledge management can act as part of the management process that concentrates on the systematic analysis and planning, creation, accumulation, storage, and application of knowledge and development, and tries to change human capital to structural capital in order to create competitive advantage, and that knowledge management is a cross task activity which is a part of the merit of a senior strategic management of an organization. The main aim of knowledge management is to change human capital of the organization into structural capital. In order to get this basic goal, knowledge management should be as follows:

1 - Strategic level in this area of knowledge management should place a knowledge-oriented subjectivity in an organization, and be sure that an organization is able to analyze and plan for its future business based on the existing knowledge and required knowledge, and provide a suitable business environment which helps the efficiency of creating new knowledge.

2 - Tactical level of knowledge management must identify proper existing knowledge and keep new knowledge in the organization to use in the future and create new systems within the organization which cause efficient and effective allocation of knowledge.

Operational level of knowledge management should take note that knowledge should be used by those who have access to appropriate knowledge in an appropriate time and space in daily practice.

Knowledge management is responsible for the management of intellectual capital which, according to experts, is the opposite of physical capital or a supplement to it.

Nowadays, implementation of knowledge management system is one of the key factors in improving business processes and also developing intellectual capital organizations, since one of the main tasks of intellectual capital management is shap-

ing the creation and attaining value processes out of knowledge.

In fact, this issue connects human resources, intellectual property and intellectual ownership. Managing intellectual capital through knowledge management can be classified into two major phases, namely.

Value Creation stage: This stage relates with the production of new knowledge and changing it into commercial innovations. Hence, managing individuals or human capital concentrates on the activities involving in creating value such as training, education, knowledge, innovation, creating organizational structures, customer development, organizational and interpersonal relationship, organizational culture management.

The Value Study phase: In this phase, the focus is on encoded knowledge by the human capital of the organization. The process of getting value has close relation with evaluation, decision processes, database, exchange structures, systems, and asset management capabilities. Hence, creating a framework for intellectual property and protecting the products or value due to the monopoly, shared investment or similar means, are essential at this stage.

Both phases of creating value and gaining value simultaneously serve a vital role in the success of the organization. Hence, we can say that the main route of the intellectual capital management through knowledge management moves from human resources to intellectual property, and then changes into intellectual property as a recognizable and more specialized form. Although it should be noted that not very large share of knowledge can be encoded, and, on the other hand, a small amount of it can be legally placed in the range of intellectual property. As a result, the rest of the knowledge may still remain in the minds of people; regarding the share of this knowledge some processes need to be designed in order to use them and improve the products. Based on the need for understanding the above issue, specific organizational structures are formed to manage, distribute, and convert knowledge, and necessary procedures to promote knowledge management come into existence. Therefore, huge costs were devoted, in the area of human capital, for the development of the efficiency of management and staffs' knowledge as well as organizational structure capital and relational, to improve and promote the organizational philosophy, procedures, processes, and knowledge networks and knowledge acquisi-

tion, products, and services performed under Intellectual property of Organization. Generally, we can say that the knowledge management forms the interaction patterns between the technologies, skills, and individuals of organizations in the form of intellectual capital. It seems that there is a great agreement about the goals of knowledge management. Identifying and individual and collective tracking to achieve strategic objectives are considered as one of the most important objectives in knowledge management. On the other hand, the goal of using knowledge in the development of the intellectual capital can be considered efficient in developing facilities and the capabilities of people in innovation, collaboration, decision-making, and the improvement and development of products and services. In other words, improving the organization's ability to perform its main processes more efficiently and creating more added values are through the knowledge of the organization. Hence, strategic mission of knowledge management can be considered as the improvement of organizational effectiveness, and, at the same time, promotion of organizational opportunities. But, if the organizations can coordinate with market changes and continual technological advances, it must be flexible. Strengthening organizational learning is one of the ways to achieve this level of flexibility. Similarly, knowledge management helps organizations to continually deal with changes through learning and the renewal of organizational knowledge. Overall, it can be said that knowledge management, as an effective and efficient management tool, will help the organizations to achieve the strategic and predetermined goals. In fact, knowledge-based organizations have realized the fact that the development of competitive advantages lie in gathering more knowledge in its various forms.

But the question is: what kind of knowledge do these organizations desire to develop or acquire? Here, based on the experience, a list of these items should be provided. Generally, it can be said that organizations tend to gather knowledge about the following issues:

- Values and cultures
- Mission, Vision, Goals, and Strategies
- Customer relationships and technical knowledge about customers
- Innovation with Commercialization
- Strategic Innovation
- Non-strategic innovation
- Innovation to create value

- Innovation in internal operations
- Organization and Structure
- Management practices
- Working Procedures
- Decision-making processes
- Databases
- Procedures

Useful information for the development of technical knowledge and capabilities

But, on the other hand, it should be noted that the success in above issues depends on the participatory culture in the organization. Some of the features of this culture are the development and support of data, information, and documentation processes in the organization. To implement knowledge management in organizations both hard and soft dimensions of the organization should be studied and, in accordance with the needs of the organization, the transformation program in these in two dimensions should be developed. Hence, to implement knowledge management, organizations have to create some requirements, such as sharing space, collaboration, and sharing knowledge. Changing the behavior of organization individuals is one of the important current issues in knowledge management, and because of that in knowledge management projects changing traditional processes and reinforcing the structures and technologies and, on the other hand, the development of behavioral patterns are emphasized. Thus, the gradual heterogeneity of knowledge management principals in organizations is one of the most important priorities. In fact, organizations, in order to use their intellectual capital, need to balance in the activities related to knowledge management. Establishing such a balance requires a change in organizational culture, technology and procedures. Some organizations believe that by focusing solely on people, technologies, and techniques, knowledge can be managed. Focusing solely on these three factors do not contribute to the organization's competitive activities, but the interaction between these issues will capable organization in knowledge management. In other words, simultaneous attention to these three components of intellectual capital, i.e. human capital, structural / organizational capital and relational capital, through regulated exchanges of knowledge in the organizations can be effective in the success of organization. So, successful organizations are organizations that distribute new knowledge in the extensive level, consisting of staffs, processes, procedures, reference networks, technologies, prod-

ucts, etc. and employ it quickly. This process leads to the development and improvement of intellectual capital level of organization, strengthens knowledge, and ultimately will create added value for the organization.

In general, based on the classification and maintenance of the components of intellectual capital and the effective elements in each sector, effective elements in knowledge management can be taken into account in some cases including the leadership, organization, technology, and education. Leadership is effective in proper business strategies for the survival and proper design and installation of organization. The successful way of each system or any organizational system must be developed in accordance with the organization's business strategies. Leadership is responsible for performance and relation strategy in the organization. On the other hand, the leader has a major role in the development of culture to meet requirements strategies for interacting with the environment to create the boundaries for lasting success.

Organizational structure should backup strategy. Correct procedure of business and management system performance should be so strong that it can meet the turmoil and challenges that can have abnormal changes in the organization. Technological is a capacity to develop organizational facilities, and an appropriate area for support development, information maintenance, processes, templates, management tools, and all organizational communications. Technologies must support the positioning strategies of the business and value with a forward-moving and steady rhythm. To succeed in knowledge management, positive feedbacks should be taken from the training in the business. If the feedbacks from the training show an increase in the efficiency of the organization, these feedbacks should be carried forward, through information management, to the boundaries of creating broad organization knowledge.

### *Knowledge Management in Human Capital*

Leadership has always been associated with the components of human capital management and training has a greater impact on the component of organization staffs. Other elements, like organizing and technology, in spite of having greater compliance with the structural components (organizational / relationship), they are influential in improving knowledge level of human capital and facilitating knowledge transfer and sharing of staffs and man-

agers in the organization. In other words, it should look for working forces that want to develop individual ability to learn and change based on the trained cases. This would require a new approach based on which other people are not just employed to fill the tasks and determined positions. On the other hand, leaders should determine the knowledge acquiring, knowledge growth, knowledge sharing strategies and pay attention to them in the processes relating to the staff. Furthermore, by strategies that create competitive advantage, lead the organization to succeed in business.

### *Knowledge management in the organizational structural Capital*

Some parts of the structural issues in knowledge management, in terms of both process elements and escalator like technologies and culture, and in terms of knowledge outcomes like the development of intellectual property, are devoted to organizational structural capital. In the extensive market of technologies and knowledge management tools, products and pre-prepared templates for knowledge management have been put forward in organizations. Hence, many organizations prefer to use the pre-prepared templates of technologies. It should be noted that the success of knowledge management in all organizations is not guaranteed, because some organizations have not understood the need for synchronization of business education, cultural changes, and organizational requirements and do not consider them. The main factor in high return of investments in technologies and knowledge management tools is the proper selection of technologies based on field and the effective use of those technologies. To choose the right technology, type of knowledge management technology, and the role of each one should initially be revisited.

Cooperative technologies may be considered as the typical type of individual cooperation in collective work, or their cooperation with a range of people involved in the organizational knowledge. More knowledge is requested through the interfaces. This technology supports the interaction and internal and peripheral collaborations of groups with the knowledge and takes forward the logic of "group for group".

Specifically, how to apply and use each of the technologies can be effective in the success of knowledge management in the organization, and, consequently, achieving the new organizational advantages. Generally, the following general functions

and categorizations can be identified in the field of technologies and knowledge management tools:

**Document management systems:** documents are important business resources, and valuable tools for documenting and developing complex systems of organizations.

**Database:** Database is storage of comprehensive and high-quality information that supports the decision-making process in organizations.

**Input ports:** It is a software framework that enables companies to make internal and external information available, and take them, through the doorway, to the target users so that they can decide about the issues relating to business.

**Recovery system:** This system improves the speed and accuracy of finding information, analyzes data and provides a situation so that the organizations can supply the required information, quickly and without the need of learning complex query methods, to the user.

**Group tool:** Through creating the possibility to exchange knowledge in the form of conversations between employees it allows saving of space, and boundaries are removed.

**Workflow system:** It allows the possibility of encrypting the data transfer process which actually is formalizing and regulating the flow of information.

**Supporting technology:** This technology in many organizations is used as a way to respond to internal and external customers requiring knowledge. Accumulation of knowledge that is created in the system accelerates the design and development of products and services.

**Knowledge mapping:** It is used for better education as business information channels.

**Education systems:** It has a direct role in the conversion of knowledge into operational actions to create technological knowledge (making knowledge professional).

It should be mentioned that all these technologies in a comprehensive form, are gathered under the umbrella of formal strategies so that these strategies, by means of “organizational and comprehensive culture”, cause the formation of a knowledge-based system in organization. Within the above definitions and categorization of technologies and effective tools on knowledge management, general classification of the most common technologies and used tools can be achieved in organizational knowledge management in distributed and collaborative frameworks. These categories are shown in Table 1.

**Table 1. Knowledge Management in the Relational Structural Capital**

Types of technology	Systems and tools
Distributive	Data Storage
	Database management technology
	Document Management System
	Electronic publishing
	Information retrieval System
	Search Engines
	Smart Devices
	Working within a team
	Model Management System
	Message or email
Cooperative	Tools Group
	Diagnostic tools knowledge
	Working within a team
	Exercises Relating to the Internet
	Support Programs
	Commenting System Support
Workflow Systems	

Accordingly, vital networks of organization’s business need knowledge to improve communications and agreements. Undoubtedly, the possibility to transfer customer knowledge to the organization and its processes, and the re-organization of this knowledge in the course of vital business networks of organization, beside strengthening the subsets of customers and developing communication in vital business networks of the organization and the satisfaction of  $\neg$  organizational stakeholders, will lead to the improvement of certain organizational characteristics and associated factors with organizational brand subsets. These are the reasons that, nowadays, paying attention to customer knowledge in organizations and knowledge management of customers is essential. At the first look, customer knowledge management may just be another name for relationship management with customer or knowledge management. However, knowledge-oriented managers, in some aspects, need some different aspects of common practices in knowledge management and customer relationship management. To understand the concept of customer

knowledge management, three kinds of knowledge flows in this management system should be referred that play a vital role in the interaction between companies and customers. These streams are: knowledge for customers, customer knowledge, and knowledge about customers. Knowledge for customers includes information about products, markets, and suppliers. This dimension of knowledge also affects on the understanding of customer form service quality. Customer knowledge is applied by organizations in creating innovation in services and products, generating ideas and continuous improvement of products and services. Gaining customer knowledge and involving customers in the innovation process can be achieved in many ways.

Studies show that some companies, instead of trying to identify the needs of customers and using them in the innovation, use their resources in the abstract laboratories to research and develop. As a result, even the companies that spend the highest costs in research and development, in the absence of customer innovation, are waiting in vain for the growth of companies' equity. While using a systematic approach for innovation, facilitates sustainable growth and profitability. At the heart of this systematic approach, which is called customer-led innovation, the customer research and development lie. Customer research and development focuses on the better ways of transmitting customer value. But, a large part of the learning process about customer and the experience to work with different market segments, customer value, and products distribution mechanisms relate to employees who regularly deal with customers. Therefore, it is essential that these employees are at the forefront of customer-focused innovation process.

Customer knowledge management, in some cases, when different functions prevent communications and working knowledge, is also very useful so that recording customer knowledge and sharing it from a central point will dramatically increase the quality and speed of making decision and servicing customers. Ian Watson, with an example from Microsoft, argued the results from strategies to enhance interaction and increase relationships with customer. In the implemented Microsoft program, enough opportunities for professional and non-professional brokers were created to provide organized access to knowledge resources. Results of the implemented programs in Microsoft show 10 percent increase in customer satisfaction, 28 percent increase in success rate, 13 percent growth in brokers'

information, and sharp drop in the required time for training brokers. According to Watson, this degree of success has been detected due to the new approach for socializing and detecting some parts of tacit exchanged knowledge during the cooperation and support of externalizing and detecting knowledge (Sveiby, 1997).

Customer knowledge programs organize the processes and knowledge management systems in a way that all the base and sub-set knowledge, in the required fields, can easily be accessible, and, as a result, lead to the added value for the organization. Customer knowledge management provides tools, processes, and fields for employees to share knowledge based on customer requirements. Staffs, by the help of customer knowledge management, understand the value of the customers' integrated knowledge, and can appropriately service valuable customers through this.

In general, it can be said that expecting customer knowledge management is creating more value from knowledge. So, the final result of it will be the development of relational structural capital and consequently the improvement of intellectual capital level.

In the next step, the organization, in order to compete successfully based on knowledge, need to align business strategy with what the organization knows or develop the knowledge and intellectual capabilities required to support the favored business strategy. Organizations should strategically evaluate their own resources and knowledge capabilities, and widely determine their knowledge strategy to focus on the gaps between what an organization knows and what organizations need to know. As a result, the knowledge strategy of organizations must, through creation processes, sharing, and application of knowledge, fill the gaps and support the organization's competitive strategy.

## Conclusions

Intellectual force management has located in the centre of contemporary knowledge. In the new economic era organizations compete in a complex and dynamic environment. Uniqueness and value creation of knowledge in the organization will create competitive strategies and wealth in this environment. Accordingly, the present and future success of value creation in organizations, to a small extent depend on the physical and financial resources and to a large extend will be based on knowledge

and intellectual capital; and their growth and development are indicators of countries' development. Thus, the duty of a leader of an organization is creating a favorable environment for the creation of these two issues. Nonetheless, unfortunately, since the nature of knowledge and intellectual capital are invisible and intangible, it cannot be measured by any traditional financial accounting scale, and the risk of "forgetting" the knowledge and other intangible assets of organization will exist for the managers. According to what have been mentioned above, it is recommended that:

1 - Managers pay attention to these two categories, and by the use of new economic factors of performance evaluation, try to eliminate the weakness of the traditional criteria in the measurement of intangible assets.

2 - Since many managers and investors may not be familiar with the new economic factors of performance evaluation, it is suggested that Tehran Stock Exchange holds seminars training classes in this field.

3 - Stock brokers are recommended to use new economic factors, beside traditional factors like the profit of each share, when they are offering consulting services to investors and shareholders

4 - Managers try to remove and reduce limiting factors of value creation by intellectual capital such as inherent risks, and problems in the negotiations.

5 - To facilitate the implementation of knowledge management some strategies, including the establishment of the knowledge database in order to create an atmosphere of trust for the implementation of knowledge management, can be presented.

6 - Relational capital has had the greatest impact on competitive advantage. Therefore, it can be claimed that planning and scheduling external communication with customers, suppliers, and investors, and measuring customer satisfaction and loyalty and relational knowledge management are another steps toward creating value and competitive advantage.

7 - Since human and organizational capitals influence on value creation and competitive advantage, through providing training, consulting, and organizational opportunities, we can improve human capital, and through appropriate customer-oriented behavior training to the staffs which have direct connection with customers, and the continuous following and timely response to customer complaints and expectations, we can develop relational capital.

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