KNOWLEDGE MANAGEMENT: Organizational, Learning and Management Perspective

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INTRODUCTION

The concepts of knowledge and learning are older that one would imagine. They have been the main subjects of philosophical and epistemological studies for the last 400 years. Many years ago Argyris started to emphasize the role of learning for the company and described different types of learning like single-loop and double-loop learning. The distinction between tacit and explicit knowledge appeared years before, too. Every now and then some authors have appeared giving a greater importance to knowledge but mostly there has been no special interest in the field.

The massive studies began when companies realized that the location, access to resources, technology and alike don't provide them with the sustainable competitive advantage. In the era of globalization the world is turning into a small village, where everyone can copy everything and where advantages of new products are more and more difficult to sustain. **Companies have become aware that the knowledge and skills of their employees are what really differentiate them from their competitors.** Why? Because we can't copy the human brain. The way we think, how we learn and how this reflects in our behavior is unique for every individual. Therefore, the only thing that gives the company a competitive edge, the only thing that is sustainable, is what it knows, how it uses what it knows, and how fast it can know something new. By the time competitors match the product, the company already moves to a new level of quality, creativity and efficiency.

Employees are well aware that the more they know the more value they have for the company. Knowledge is the foundation for many careers. In traditional hierarchically structured organizations those employees were promoted, which had more knowledge and because of their uniqueness they became indispensable. **Knowledge hoarding** was a way of assuring oneself an employment as well as promotion. But benefits of such knowledge were far from optimal. Companies of today are fully aware that **the most valuable knowledge a company possesses is the one floating around among individuals**, allowing associations, making people think and creating new knowledge. The real potential of the company is therefore in the knowledge that is hidden in its employees' brains, which they intentionally or unintentionally don't share with their co-workers.

In past, highly specialized knowledge was the most valuable one. But today it is much more important that **employees know many fields, know the work of their co-workers** in order to be able to substitute them in case of emergency. **Communication skills, ability to work with people and to understand every individual as well as emotional intelligence** are the skills that are crucial for the modern world. It is therefore understandable that **team-work** has been recognized as the best way of connecting people to work together especially on complex and important research assignments.

If we compare the way we do business today and how it was done in past, we can say that the **Taylor's distinction between thinkers and doers doesn't apply anymore.** Every single job today, no matter how unimportant it may seem, demands some level of thinking. **Tasks are becoming more and more complex and demand an ability of creative and innovative thinking.** If we only look at some job advertisements, we can see that companies are seeking employees that can think beyond frames, are creative, and are all the time looking for new ways to improve their work. We can say that they are constantly learning, one way or another.

When we talk about these changes, we should not forget to mention the **contribution of technology**. The ongoing developments in technology have enabled companies to be constantly in touch with their employees in different parts of the world, to transfer all sorts of documents, store such amount of information, data and knowledge, that has until now been impossible. Technology has enabled quicker learning, better codification and storage of knowledge as well as better transfer and usage of knowledge for new knowledge creation.

1 KNOWLEDGE OF INDIVIDUALS AND ORGANIZATION

When we talk about the increasing importance of knowledge, we are not interested in the knowledge of an individual but in the knowledge that individuals in organization create collectively and continuously use at work. Only if the knowledge individuals possess, tacit or explicit, is shared and applied to work and used to create new knowledge, we can say that it creates a competitive advantage for the company. In past, a great importance was given to information as the only form of knowledge. But information by itself can't enhance innovativeness. Information must be combined with experiences and values in order to enable the evaluation and development of new knowledge, experiences and information.

In the following we will first explain the difference between data, information and knowledge and then what we mean by explicit and tacit knowledge as well as individual and organizational knowledge.

1.1 Data, information, knowledge, wisdom

Even though many authors don't make the distinction between data, information and knowledge, there is a big difference between these concepts (Tobin, 1998, pp. 24-26). The lowest level is represented by **data** that exist inside or outside the company and don't have any special importance for our work. But when we see some relevance in some data and find that they have some purpose related to our job, the data become **information**. Only when information is applied to the job, **knowledge** develops. Information is applied to the job to make a positive difference in the employee's job performance and company's business results. When knowledge is combined with intuition coming from personal experiences, **wisdom** is created. It's main characteristic is that it can't be taught, but has to be developed through experience. This is the reason why some authors refer to wisdom also as tacit knowledge (See Figure 1).

Figure 1: Four stages of learning
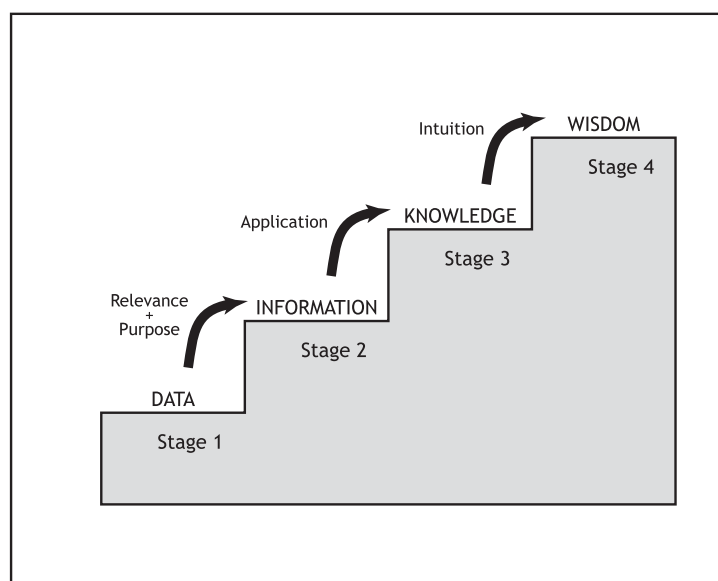
If we try to explain knowledge in more detail, we can say that **knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information** (Davenport, Prusak, 1998, pp. 2-5). It originates and is applied in the minds of people. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. Knowledge is intuitive and therefore hard to capture in words. It exists within people as part of human complexity and unpredictability. Another definition explains knowledge as **a justified true belief and a dynamic human process of identifying the personal belief toward the truth** (Nonaka, Takeuchi, 1995, p.58). It is essentially related to human action and is context specific and relational. Knowledge is created by flow of information, anchored in the beliefs and commitment of its holder. Another important characteristic of knowledge is that knowledge assets increase with use. Ideas create new ones, shared knowledge stays with the giver and enriches the receiver as well.

1.2   Explicit and tacit knowledge

Clearly the most important distinction of knowledge is between explicit knowledge and tacit knowledge (O'Dell, Grayson, 1998, p.4). **Explicit knowledge** is knowledge that can be identified, defined, stored and transmitted for a consistent reuse. It can be articulated in formal language including grammatical statements and codified in mathematical expressions, specifications, etc. It comes in the form of books and documents, papers, databases, policy manuals, etc. Hand-in-hand with the explicit knowledge, the business of an organization is built on a combination of competencies, experience and intuition that rules the skills of each worker to do his/her job, resolve problems and take initiatives and decisions (Alio, 1999, p.317). This is the **tacit knowledge** that resides in individual persons or in specific communities within the company. It is found in heads of employees, experience of customers, memories of past vendors. It is hard to articulate with formal language or codify. Subjective insights, intuitions and hunches fall into this category. Tacit knowledge is deeply rooted in an individual's action and experience, his/her ideals, values or emotions (Nonaka, Takeuchi, 1995, p.8). It is personal knowledge embedded in individual experience what makes it difficult to communicate or to share it with others. Tacit knowledge is hard to catalogue, difficult to document in any detail and transitory (Tobin, 1998, p.29).

1.3   Individual and organizational knowledge

How do we know that some knowledge is not individual but organizational? **Individual knowledge** is owned by individual employees and resides in their minds, whereas organizational knowledge exists in the organization and is created through organizational learning. **Organizational knowledge** can be in a tangible form like patents and licenses or in an even more important intangible form like technical know-how, product design, marketing presentation, understanding the customer, personal creativity and innovation (Tobin, 1998, p.52). It can also be seen as company's intellectual assets. An approach to recognizing knowledge as a corporate asset is new to companies. They are starting to understand that they have to manage and invest into knowledge with the same care as paid to getting value from other more tangible assets (Davenport, Prusak, 1998, p.12).

A good way to explain what is included in organizational knowledge is through intellectual capital. **Intellectual capital** is a hidden value of the company that reflects in the difference between the market value and the value of financial capital (the difference between the book value and what somebody is prepared to pay for it) (Brooking, 1997, p.364). One of the distinctions on intellectual capital divides it into human capital and structural capital (See Figure 2).

Human capital is not owned by the company and leaves the company with employees. It can be divided into competence, attitude and intellectual agility (Roos et al., 1997, pp. 35-41). Competence generates value through the knowledge, skills, talents and know-how of employees. Attitude depends mostly on personality traits and can be improved very little by company efforts. It covers the value generated by the behavior of employees at the workplace. Intellectual agility as the last part indicates the ability to transfer knowledge from one context to another, the ability to see common factors and

link them together and the ability to improve knowledge and company output through innovation and adaptation.

Structural capital as the second part of intellectual capital includes all databases, process manuals and intellectual property of the company and is clearly owned by it. Structural capital has three components: relationships, organization and renewal and development (Roos et al., 1997, pp. 42-51). Extremely important relationships with outside parties can be built through long-term exchange of information and goods. They benefit the company in cost savings, just-in-time policies and higher quality. Organizational value includes physical and non-physical manifestation of intellectual capital related to the internal structure of the day-to-day operations. We can look at organizational value from three different aspects: infrastructure, processes and culture. Renewal and development value includes the intangible side of everything that can generate value in future like new product development, reengineering and restructuring efforts, development of new training programs, research and development, etc.

Figure 2: The intellectual capital distinction tree
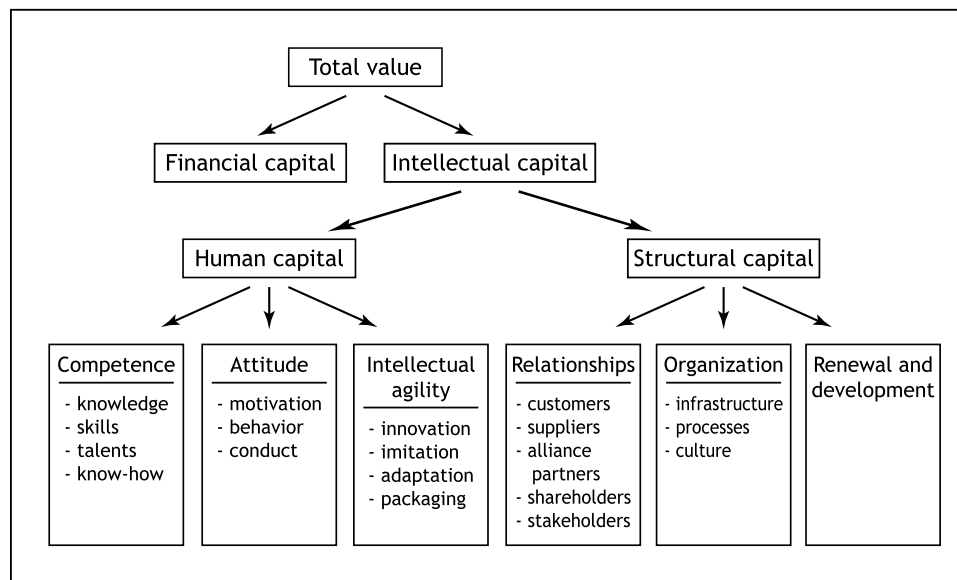
Source: Roos et al., 1997, p.57

From the intellectual capital distinction tree it can be seen that individuals' knowledge presents one part of the total knowledge of organization (Roos et al., 1997, p.35). Knowledge of organization is more than a sum of knowledge of individuals. Individuals in organization are connected with each other. Therefore, their knowledge not only influences how they work and behave, but because of tight relationships between them, it also influences the behavior of others. This results in synergetic effects, creating more knowledge and value for the company. In order to have large organizational knowledge, knowledge of individuals should not be completely different, neither the same. It must be complementary and adjusted to the needs of organization.

2 LEARNING AS A WAY OF CREATING NEW KNOWLEDGE

The way in which individuals create new knowledge, skills and values is learning. It creates changes in our behavior and actions that help us better satisfy our needs and overall company goals. Learning always happens on the individual level, but it also heavily depends on relations in the group or in the company. Therefore, we can talk about learning at an individual, team or organizational level.

Individual learning has been defined as a process by which individuals gain new knowledge, skills, insights, attitudes and values that result in a change of behavior and action (Marquardt, 1996, p.30,

Lewis, 1999, p.80). This is done through self-managed learning, learning from co-workers, computer-assisted learning, daily work experiences, special assignments on projects and personal insight and observation. The purpose of individual learning is to do something one couldn't have done before, therefore changing one's behavior to correspond better to one's individual goals that must be in correlation with company's goals (Swieringa, Wierdsma, 1992, p.20).

Two ways of individual learning are the most important: learning from one's own experience and learning from other people. When **learning from one's own experiences**, people use their five senses to observe, listen, feel, smell and hear (Reay, 1997, p.15). This kind of learning starts in the first few years of a human life when one learns the most. In that period, learning happens continuously and naturally, mostly in an unconscious and accidental manner. **Learning from other people** also appears very soon in life by listening and observing how others deal with certain situations. In such cases learning becomes deliberate. These two types of learning are also the most important for organization, where employees learn by making mistakes on the job and from other employees. Learning from other employees can happen through company-directed methods (attending classes, on-the-job training, watching videotapes, listening to audio tapes or using a computer-based or multimedia presentations, reading manuals and reports) or informal learning methods (asking a question the manager or employee, observing how they do their work or discussing work with others that do similar or related work) (Tobin, 1998, pp. 78,79). Formal methods are essential for sharing explicit knowledge and informal for sharing tacit knowledge.

From the point of view of organization, individual learning is the necessary condition for the organizational learning but is not sufficient. A step closer towards learning together as an organization is team learning. The core concept in **team learning** is that the actual increase in knowledge, skills and competencies is accomplished by and within a team (Lewis, 1999, p.80, Marquardt, 1996, p.22). Teams are groups of people working collaboratively with a shared purpose and are usually composed of mixed knowledge, insights and skills as well as characters, values, roles and functions (Mayo, Lank, 1996, p.153, Swieringa, Wierdsma, 1992, p.71). They have become more and more important for companies because they have proved to be more successful than individuals when coping with more complex problems. This is the case when team members are co-ordinated in order to reach the same goals. In such circumstances researches have proved that intelligence of a team is higher than the highest intelligence of an individual team member. They create synergy, resulting in a bigger success than individuals would be able to achieve. Therefore, teams have become the most appropriate tool for focusing efforts and improving innovativeness. Since teams are usually cross-functional, they facilitate cross-functional learning and sharing of ideas (Lei, Slocum, Pitts, 1999, p.34). When teams are truly learning, they are producing extraordinary results and individual members are growing more rapidly than they would alone (Senge, 1994, p.10).

The last level of learning is organizational learning. Organizations learn only through individuals who learn. Individual learning doesn't guarantee organizational learning, but without it no organizational learning occurs (Senge, 1994a, p.141). Organizational learning occurs through the shared insights, knowledge and mental models of members of an organization, building on past knowledge and experience; that is on organizational memory (Marquardt, 1996a, p.22, Lewis, 1999, p.80). **Organizational learning means the changing of organizational behavior**. It is a collective learning process that takes place in and through interaction with and between a number of people. Organizational learning happens only if as a result of individual learning all other members operate differently. Therefore it happens only if individuals learn something. Change in behavior of one individual has an effect on the behavior of others what results in mutual behavioral change. We can say that organization as a whole learned something (Swieringa, Wierdsma, 1992, p.33). Organizational learning goes on in a process with different phases. The knowledge that is created in this process is the knowledge of entire organization and is bigger than the sum of knowledge of individuals.

3   IDEA BEHIND ORGANIZATIONAL LEARNING

People learn through relationships developing among individuals living or spending a certain amount of time together. These are relationships that enable the technical division of work, allowing someone to specialize in production or in sales, as it was done in the history when some individuals were in charge of taking care of their families, others of searching for food and so on, specializing only in their particular job but not forgetting where their jobs fit in the whole scheme.

When talking about organizational learning, we must be aware that when individuals learn on their own, in their private life, they do it because they want to learn, they are highly motivated. But in an organization, learning happens not because we like to learn but because we have to learn. It is connected to our role that we play in a company (Spender, 1998, p.16). Because of connectivity of all jobs, we have to adjust to the whole organization and learn what is necessary for our job, not what is of personal interest to us. Because we are not eager to learn but are more forced to do so, we are more slow at learning and therefore we learn less. This stands particularly for learning in classical organizations, where employees are forced to learn and work and must therefore be controlled constantly.

If employees were interested and motivated, they would absolutely learn much more. This speaks in favor of the great role managers play in organization. The result of their influence is that individuals of an organization really learn more. It is important that they carefully select the right people, which they then coordinate and motivate to establish balance between learning and knowledge that is needed. When employees are as motivated for learning as they are in their private lives, they will learn faster and develop more ideas, thus creating better results for organization.

3.1   Organization and learning

Organizations are social structures formed by individuals and groups (Maier, Prange, von Rosenstiel, 2001, p.25). In such structures groups are social systems perceived as an entity by its members as well as its non-members. Its members are to certain level interdependent and usually in a group a differentiation of roles and duties takes place. There is a common reason why people connect in organizations. As civilizations have prospered with time in history so do now organizations. Due to relationships that emerge, employees pass on knowledge to newcomers, learn from them and most of all they learn together. The new knowledge that is created is owned by individuals and organization. We can also say that it is the process of knowledge creation going on in organizations.

Even though knowledge is tightly connected to individuals, especially when talking about tacit knowledge that is hidden in human brain, individual acquisition of knowledge is not enough to be considered as organizational learning (von Krogh, Roos, 1995, p.61). How organizational knowledge will be created, heavily depends on the relationships among individuals. For creation of organizational knowledge the relationships are even more important. Good relationships will enhance creation of knowledge on the level of organization and vice versa. Organizational learning is therefore not learning of independent individuals, but of individuals that are in tight relationships with each other.

When we talk about organizations, we usually emphasize that they are more than a mere sum of individuals. They are a new quality and they follow their specific goals. Similarly, we can argue that the knowledge of an organization is more than a sum of knowledge (connected to the organization and their roles) of independent individuals. It is a sum of knowledge of integrated individuals. The synergy and its size are conditioned by relationships among members of an organization (as a social unit). Organization (of an organization) being by definition a system of dynamic relationships, its knowledge depends on its members themselves and on organization (of an organization). Still more, organization (a system of dynamic relationships) enables synergy and makes the knowledge of an organization greater than the sum of independent individuals.

Let us quote a few authors that came to a similar conclusion. Grant (2001, pp. 146-147) sees the technical division of labor as a basic principle within knowledge management. Probst, Raub, Romhardt (2000, pp. 21-22) argue that the abilities of individuals are the basis for success of an organization. But the final success depends on how their knowledge is coordinated. Nonaka and others (2001, pp. 13-43) talk about the "ba" concept as one of three basic principles for knowledge creation. "Ba" means that knowledge is created through establishing relationships among people.

In organizations employees as well as departments specialize in certain domains of knowledge. Though not everyone must know everything, all the distributed knowledge should be taken into account when knowledge is needed to make better decisions (Maier, Prange, von Rosenstiel, 2001, p.27). It should be well born in mind that organizations can possess more knowledge than individuals. In order to assure benefits of specialization, everyone must know who is responsible for what and there must be a certain level of confidence in the reliability of specialized knowledge. On the other hand, knowledge must be extracted and stored on other media in order to remain in organization regardless of its turnover of employees.

3.2   Learning through connectivity

As mentioned before, the most important type of learning in an organization is not learning from each other, observing what we do, but learning that happens through our connectedness. When we work together, we usually don't perform the same tasks. But these tasks are more or less connected among themselves influencing directly or indirectly each other (Spender, 1998, p.19, Swieringa, Wierdsma, 1992, p.20). Our work must therefore be synchronized to allow for matching particularly in its overlapping parts. It is like in an orchestra. We all play different instruments, our melodies slightly differ but we all together contribute to the final song making it a success or just a noise. In an orchestra, a certain type of learning takes place. It is not the learning from others, we don't want us all to play violins. We have to learn to play harmonized, each performing our own duties but taking into account all the other instruments, ever improving our own work. The conductor plays here the crucial part.

An even better example would be a practice of a football team when preparing collectively for an unknown situation that will happen during the game. In order to score (achieve a point), the forward must get help from all the other players passing the ball in the right moment, stopping the other players, making enough room and opportunity for him to kick (hit), to do what he is specialized and good at.

To present what connectedness means for an organization, let us take an example of organization having a tight connection between its sales and production department. We can agree that they must learn to get along in order to be coordinated, but they don't learn from each other how to sell or produce. They learn just the part that is in connection with their work, the overlapping field, the one that creates synergies. We could call this type of learning »connected learning« or learning through relationships in organization. However, when we emphasize learning through connectivity, we also should not forget learning that happens through analogy. Learning through analogies happens when departments learn from each other the good practices, best solutions. They use this knowledge when they come across similar problems, when they just put the newly gained knowledge in their own context, solving the problem in a similar way.

As the conductor and the coach, the manager in organization plays the most important role in connected learning. He is the one who sets the rules and creates the necessary circumstances for connected learning. He coordinates the learning activities of individuals and organization.

4   ORGANIZATIONAL LEARNING PROCESS

The organizational learning process consists of four phases: knowledge generation, knowledge codification, which includes also knowledge storage, and then knowledge transfer and knowledge use

(See Figure 3). This process is not happening on an individual level, but on the level of the whole organization and is to a large extent enabled by technology.

Figure 3: Organizational learning process
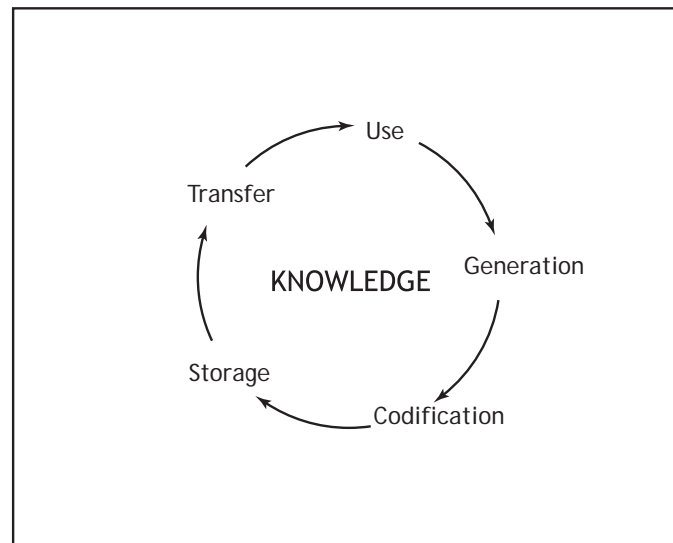
The first phase, **knowledge generation**, includes different ways to consciously and intentionally increase the stock of corporate knowledge. This can be done through learning, buying or renting knowledge as well as creating dedicated resources. The organization usually decides to buy knowledge when it is too expensive to create it. The quickest way of buying the necessary resources is by hiring people with knowledge, acquiring or merging with a company that has knowledge or by subscribing to external services that collect information. When the learning need is only temporary, companies decide to rent knowledge by hiring a consultant or they subcontract the problem to another company. Such solution is only short-term to meet an immediate need (Tobin, 1998, p.188, Marquardt, 1996, p.131). Another way to generate knowledge is to establish dedicated resources in a form of a department like research and development departments, corporate training facilities and corporate libraries whose goal is creating new knowledge (Davenport, Prusak, 1998, pp. 58-62).

The second phase, **knowledge codification,** is an activity that puts organizational knowledge into a form that makes it accessible to those who need it (Davenport, Prusak, 1998, p.68). It literally turns knowledge into a code to make it as organized, explicit, portable, and easy to understand as possible by converting it into accessible and applicable formats. In order to have successful codification, managers should first decide what business goals the codified knowledge will serve. They should be able to identify knowledge existing in various forms appropriate to reaching those goals. After that knowledge should be evaluated for usefulness and appropriateness for codification, whereas codifiers should identify an appropriate medium for codification and distribution. When knowledge is codified, it can be stored for later transfer (Marquardt, 1996, p.137). Knowledge storage is a very important activity because it enables later easy retrieval. Knowledge should therefore be organized in a way to be quickly and correctly retrieved, and presenting the true picture.

Some knowledge in organization is much easier to codify than other because it is much more structured and has an explicit content. On the other hand there is knowledge that resides in individuals and is partly or largely inexpressible. In such case codification can remove distinctive proprieties of knowledge and can turn it into information and data. Therefore, providing access to people with such knowledge is much more efficient than trying to capture and codify that knowledge electronically or on paper (Davenport, Prusak, 1998, p.69). An important activity that helps to bring some structure into what a company knows is knowledge mapping. It connects corporate knowledge with its sources. Knowledge maps that are created as a result don't contain knowledge but point to it as a guide.

Developing a knowledge map involves locating important knowledge in the organization and then publishing some sort of a list or picture that shows where to find it.

The third phase, **knowledge transfer,** also called knowledge dissemination or sharing (Marquardt, 1996, p.129), is part of organizational life irrespective of whether or not we manage it. Usually it happens when employees talk about problems. At such occasions they share their tacit knowledge with colleagues. The "transfer relationship", such as partnership or mentoring, is usually essential. The more rich and tacit knowledge is, the more technology should be used to enable people to share knowledge directly. In case of explicit knowledge technology must enable employees to use certain tools to help them locate knowledge they need (Davenport, Prusak, 1998, p.100). There are two ways of transferring knowledge. The push knowledge transfer occurs when one individual or team pushes out information to another individual or team. The pull knowledge transfer is another type that occurs when the learner directs the learning transfer. He/she seeks for knowledge that he/she needs (Fisher, Fisher, 1998, p.190). The major factors in the success of any knowledge transfer project are the common language of the participants, trust and mutual respect.

The last phase, **knowledge use** for creation of new knowledge, focuses on how much knowledge that is transferred throughout a company is used at work and it helps to create new knowledge. It is crucial that employees are stimulated to use knowledge of organization to improve their work, create new knowledge, embody it in products, services and systems, in order to continuously provide the company with innovation. Throughout this phase, we can say that employees are learning something new that they will again be encouraged to share with co-workers. The cycle will therefore start repeating itself. The goal of organization is to continuously repeat the cycle in order to create and use knowledge so as to create new one as quickly as possible.

5   KNOWLEDGE CREATION PROCESS

The dynamic model of knowledge creation is based on assumption that human knowledge is created through social interaction between tacit knowledge and explicit knowledge (Roos et al., 1997, p.16). This interaction is called knowledge conversion and is going on between individuals. There are **four models of knowledge conversion**: socialization, externalization, combination and internalization (Nonaka, Takeuchi, 1995, p.62). They are created when tacit and explicit knowledge interact with each other and constitute the engine of the entire knowledge-creation process.

Socialization is conversion from tacit to tacit knowledge (Nonaka, Takeuchi, 1995, pp. 63-70). It is a process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills. An individual can acquire tacit knowledge directly from others without using language but through observation, imitation and practice. Conversion from tacit to explicit knowledge is called **externalization**. It is a process of articulating tacit knowledge into explicit concepts with the help of language in writing or in dialogue or collective reflection. Externalization is the key to knowledge creation because it creates new, explicit concepts from tacit knowledge. Conversion from explicit to explicit knowledge, **combination,** is a process of systemizing concepts into a knowledge system. This involves combining different bodies of explicit knowledge. Individuals exchange and combine knowledge through such media as documents, meetings, telephone conversations, computerized communication networks. Reconfiguration of existing information through sorting, adding, combining and categorizing of explicit knowledge can lead to new knowledge. **Internalization** is conversion from explicit to tacit knowledge and is closely related to learning by doing. When experiences through socialization, externalization and combination are internalized into an individual's tacit knowledge base in the form of shared mental models or technical know-how, they become valuable assets. When most employees share such mental model, tacit knowledge becomes part of organizational culture.

When tacit knowledge accumulated at an individual level is socialized with other organizational members, a new spiral of knowledge creation starts. Organizational knowledge creation starts at the level of tacit knowledge of individuals. When this knowledge is shared among employees and goes through all four modes of **knowledge conversion,** it moves up to the group level. The spiral process

then continues and crosses sectional, departmental, divisional and organizational boundaries, creating organizational and inter-organizational knowledge (See Figure 4).

Figure 4: Spiral of organizational knowledge creation
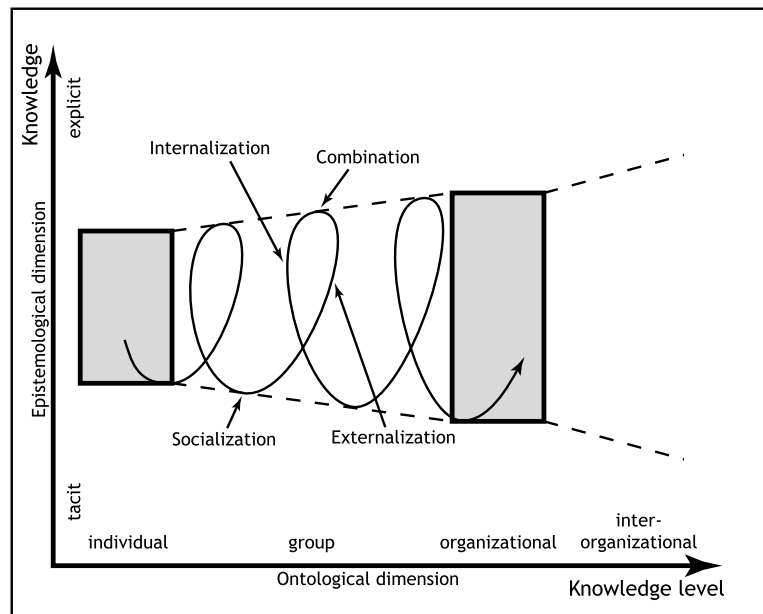
6   TYPE OF ORGANIZATION TO SUPPORT ORGANIZATIONAL LEARNING

If we say that knowledge of an organization is created through learning of connected and coordinated individuals, we agree that not all relationships are crucial for learning and for enhancing it. Now that we know that relationships create organization (of organization), we have to ask ourselves what kind of organization (of an organization) will be the most appropriate for knowledge creation and the use of it.

As seen from the past experience (Pawlowsky, 2001, p.62), we cannot expect one "best organization", even for knowledge creation. In fact we can say that in all types of organizations individuals are connected, irrespective whether this is a mechanistic or organic organization. Relationships grow in either type. But what types of relations are the most appropriate for organizational learning and knowledge management? What kind of organization (with regard to contingencies) do we need to implement to support the knowledge creation.

6.1   Learning in mechanistic organization

In past, learning first took place in mechanistic organizations. By their characteristics these organizations are highly bureaucratic and operate with highly centralized authority, many rules and procedures (Schermerhorn, 1999, p.223). Their technical division of labor is very precise and jobs are highly specialized. Such organizations have narrow spans of control and mostly formal means (hierarchy) of coordination. They have a tight structure and traditional pyramid form. Detailed job descriptions provide a precise definition of rights, obligations and technical methods for performing each job (Dessler, 2000, p.223). Mechanistic organizations developed in past because they are very appropriate for a stable environment, mass production in large companies, very specialized technology, etc. Due to contingencies, this form still exists and is most appropriate for quite many companies.

The process of organizational learning in mechanistic organizations was very centralized at the highest levels of hierarchy and it focused mostly on explicit knowledge (codified, expressed knowledge) with the goal of creating higher efficiency. Learning of new things was mostly limited to the management level, expecting the employees to obey the orders and do their jobs faster and with less mistakes. However, the workers themselves participated in learning through repetition, experiences and routine. It was recommended that they should make some suggestions for improvements. Learning was measured with learning curves that focused primarily on ability to create products and services through lower costs. We can see that learning curves appeared much before the emphasis was given to knowledge management. The main purpose of learning was to increase efficiency, through repetition, experience and monitoring, focusing only on incremental development. The emphasis was on the use of existing knowledge and improvements.

The learning curves used for measuring the results of the learning process created through experience are based on the premises that people and organizations become better and better at their tasks as tasks are repeated (Heizer, Render, 2000, p.834). The learning curve is based on doubling the productivity (Boerner, Macher, Teece, 2001, p.98). When production doubles, the decrease in time per unit affects the rate of the learning curve. The time to produce a certain unit decreases, following a negative exponential curve as the person produces more units. But time saving by completing each additional unit decreases showing us the limitation of this type of learning. Small improvements can produce better results only to a some certain level. To go beyond this level, organizations had to start learning in a different manner.

Another limitation appears when any change in process, product or personnel disrupts the learning curve (Heizer, Render, 2000, p.835). Due to changes in the environment, fluctuation of employees as well as need for customized products, organizations had to adapt their organizations to such new contingencies, causing the learning curve to be no longer the most appropriate measure of learning in an organization. Due to changes, learning curves showed a great decline in productivity on the short run, but experiences of companies showed that the long-term benefits, not measured by the learning curves, were much greater. New measures had to develop to monitor progress, because it is very difficult to tie changes in knowledge to overall results of the company.

6.2   Learning in organic organization

The beforehand mentioned changes in contingencies have led to development of new organic structures that are more convenient for learning new things, constantly creating new knowledge and innovating. Organic organizations are typically characterized by little preoccupation with the chain of command and by a very decentralized authority with fewer rules and procedures (Schermerhorn, 1999, p.224). They have a more self-contained, divisionalized structure of work, where job responsibilities are not seen as a limited field of rights and obligations. Employees work in teams and a lot of work gets done through informal networks of interpersonal contacts. Therefore, lateral communication are encouraged with emphasis on consultations and very personal means of coordination (Dessler, 2000, p.224). Organic organizations are appropriate for an innovative environment, individualized production and smaller, more agile companies, for constantly changing conditions.

Due to these characteristics, we would hardly think of a more effective organization to support learning than the organic structure. Organic organization focuses mostly on tacit knowledge that enables decentralized decision-making. It supports all types of learning in order to stimulate creativity that results in all sorts of novelties. Novelties, in fact, can not be created through repetition but through working in teams, facing all the time new demands and limitations. Therefore evolution as well as revolution are necessary, fostering creativity and innovativeness. As mentioned before, learning curves were not appropriate to monitor the benefits, therefore companies had to develop new ways of measuring learning and knowledge. They created several indicators like how many new products are introduced, how much money is spent for R&D, staff satisfaction, employee turnover, profits per employee, money spent on further training, average years of service with the company, average age of staff, percent of companies managers with advanced degrees, etc., which they connected into balanced

scorecards (Liebowitz, Suen, 2000, pp.55-56,61). Though it is difficult to estimate the value that knowledge activities have contributed to the value of the company, the market does so by increasing the market value of the company by assuming the increase of its intellectual capital (Reinhardt et al., 2001, pp.796-800).

Now, how can we assist the organizational learning process and create the most beneficial relationships? The best answer would be through management, management of people, their knowledge and their relationships.

7 KNOWLEDGE MANAGEMENT – THE WAY TO ASSIST THE ORGANIZATIONAL LEARNING PROCESS

When talking about knowledge management, most authors don't refer to management as planning, organizing, leading and controlling. Though we could say that as we manage the business cycle (purchasing, production, sales, employees, finance), we can also manage the knowledge cycle, including all the organizational learning activities. Therefore knowledge management would rightfully include all the activities that would assure the purposeful creation and usage of knowledge.

To provide the basis for the true management of knowledge, we would start by the planning of knowledge. We would first identify the knowledge that already exists within the company, set up the goals and strategies for knowledge acquisition and use it to close the identified knowledge gap. Then we would do what was planned. This includes generating knowledge from outside the company by employing new people and hiring consultants as well as developing knowledge inside the company. A strong leadership support would be crucial in this part. The process would be completed by controlling the knowledge of the whole organization and its individuals with different indicators.

Another approach to analyze knowledge management activities even more systematically and consistently would be through each separate phase of the organizational learning process (See Figure 5).

At the beginning, every company must start by identifying knowledge that already exists in it and compare it to its knowledge needs. This is the role of **planning for knowledge generation**. This means every company must first find out what knowledge (tacit or explicit) it already possesses and what knowledge is further needed in order to achieve the company's overall goals. The knowledge gap that is recognized can be filled up by choosing a strategy either to get knowledge from outside or to create the missing knowledge inside the company. Therefore, the company must first have such **culture** that will support learning and generating knowledge and at the same time its **organizational structure** must have mostly organic elements that encourage employees to take the initiative for learning. The company should give much more importance to **employing** the right people, **motivating** and **rewarding** them in order to encourage learning and teamwork. All these changes will partly or completely close the knowledge gap so that at the end the **control** will identify the increase in individual knowledge and knowledge of the whole organization as well as the increase in new products or innovations the company has developed. Findings will be used in the future planning activities.

When knowledge is generated, we can move on to the second phase of the knowledge cycle and start by **planning the knowledge codification**. Mostly tacit knowledge must be converted into an explicit form and gathered in databases with the help of certain information technology or other tools. If the company doesn't have the needed tools, the second gap appears. It is recognized as the technology, tools gap. The company has to decide on the strategy what tools to provide in order to change the tacit knowledge into an explicit form. For this purpose the **organizational structure** of the company must have some mechanistic elements because many "soft" items will be to some extent formalized. In this phase, the biggest importance goes to **information technology** that can either be bought or developed in the company. **Leading** involves assigning the right people to the job of the chief knowledge officer (CKO) and other new knowledge jobs like knowledge integrators, librarians and others. They will help

Figure 5: Knowledge management

			ORGANIZATIONAL LEARNING PROCESS			
			KNOWLEDGE CREATION	**KNOWLEDGE CODIFICATION**	**KNOWLEDGE TRANSFER**	**KNOWLEDGE USE**
MANAGEMENT	**PLANNING**	**Goals Strategies**	Knowledge company has Knowledge company needs **KNOWLEDGE GAP** Strategy: - to get knowledge (outside) - to create knowledge (inside)	Uncodified knowledge Change into codified knowledge **TECHNOLOGY, TOOLS GAP** Strategy: - to change knowledge into desired form	How is knowledge shared? How it should be shared? **CULTURE, AWARNESS GAP** Strategy: - change culture and leadership	How is knowledge used? How it could be used? **RESULTS GAP** Strategy: - to improve knowledge use
	ORGANIZING	**Relationships Structures**	Culture that encourages learning activities and knowledge generation Organizational structure (organic)	Information technology Organizational structure (mechanistic elements)	Information technology that enables transfer of explicit knowledge and face-to-face communication for sharing tacit knowledge Culture that supports knowledge sharing	Culture that allows mistakes and risk-taking Organizational structure (organic)
	LEADING	**Motivating Communicating Employing**	Employ the right people Motivate and reward employees Education, teamwork	New knowledge jobs: chief knowledge officer (CKO), knowledge integrators, ... Get the right people	Motivating and rewarding for knowledge sharing, Encourage communication, teamwork	Rewarding for using new knowledge at work
	CONTROLLING	**Measuring results, The change in gap**	Gap control Controlling the increase in knowledge of individuals and organization Number of new products, innovation, etc.	Gap control Controlling the increase in knowledge base Creation of knowledge map	Gap control Controlling the transfer among individuals, communication, knowledge flow	Gap control Controlling benefits: increase in profit, increase in company's market value
		Responsibility of	**TOP MANAGEMENT**	**CKO**	**MIDDLE MANAGEMENT**	**TOP MANAGEMENT**

employees to structure their own knowledge. At the end, **control** will check how the tool gap has been closed and what has been the actual increase in the knowledge base as well as if the company's knowledge map has been developed.

When knowledge becomes codified, we have to transfer it across entire organization. This is the role of the **knowledge transfer** phase where the third gap is identified. It is primarily the culture awareness gap and is the result of the difference in the way how knowledge transfer or sharing is actually performed in the company and how it should be in order to be more effective. Another gap that has to be filled up is the necessary technological infrastructure gap. By filling it up we enable the transfer of explicit knowledge and face-to-face communication permitting the sharing of tacit knowledge. Therefore the company has to change **corporate culture** to encourage knowledge sharing activities. Employees have to be **rewarded and motivated** to communicate and continuously work in teams. By **controlling** the company at the end recognizes how much the knowledge transfer among individuals has improved and to what extent the new ways of communicating and new flows of knowledge have closed the recognized gaps.

The goal of the knowledge management is to achieve the company's goals. So the whole process must contribute to the end results of the business. Therefore, in the last phase our attention turns to **usage of knowledge** and discovering the gap between how the knowledge that is shared among employees is used at work in order to create results. When this is compared to how it could be used, the company has to choose a strategy to improve the knowledge use and get better results. The company must develop such **culture** that will allow mistakes and risks; **organization** will again be mostly organic and employees will be **rewarded** for using knowledge at their work. At the end, **control** will discover what have been the benefits of the whole process, such as increase in profit or the market value, etc. It would be difficult to find someone with more influence on organization than company's managers. They play the most important part in it. They plan, organize, lead and control the business. But their role is especially important for "soft" elements of the company. Managers are mentors, role models for their subordinates, they create vision and influence the culture of organization as well as develop the motivation and reward system of the company.

Managers perform extremely responsible and important tasks throughout every phase of the organizational learning process. In the knowledge generation phase they are **leaders, mentors, coaches and role models** that support and encourage learning of all employees. In the knowledge codification phase they as **architects** make decisions about necessary information technology and overall infrastructure that will help transform knowledge into a codified form. Throughout the knowledge transfer phase they **counsel and coordinate** as well as encourage knowledge sharing. In the last phase, managers are mostly **role models** for other employees and successful new knowledge creators.

But which management level is the most important throughout each phase? Can we say that the top management is the most important for the knowledge generation phase when we know that learning is responsibility of each individual? What is his/her role in all the other phases? At this point we can say that all levels of management are very important for each phase, but in a certain phase a certain level of management is more important. In the first phase, the **top management** has to create the initiative and start building awareness to get the process going. In the second phase, the **chief knowledge officer** has a crucial role because he/she monitors the building of the necessary technological infrastructure that will enable knowledge codification. In the knowledge transfer phase, the **middle management** can really enable knowledge sharing through mentoring and coaching their subordinates, whereas in the last phase the importance of involvement of the **top management** grows again because they control the whole process and search for results.

8   CHALLENGES FOR MANAGEMENT

When companies decide to start with knowledge management they come across several problems. They recognize that things are not happening as they should. Several problems appear connected to the learning of employees as well as sharing the newly gained knowledge and using it to create new opportunities.

First of all we must emphasize that people are mostly afraid of changes and want to do their work in the good old way. On the other hand they have too much work to do, therefore they don't have time for learning. Managers usually send to seminars those people whom they can miss for a couple of days and not those that do the major amount of work. Therefore it is important that companies provide the learning opportunities as well as time for all their employees. Only then employees will have the possibility to gain more knowledge already as part of their work. Many times it also happens that certain employees don't want to learn and they avoid to use the new knowledge at work. In such cases managers must try to motivate these people, by showing them "what's in it for them". Employees must recognize learning as beneficial not only for the company but for them personally. Therefore some rewards must follow desired behavior, like career improvements, stimulations, pay increase as well as symbolic rewards like appreciation or praise that will increase employees' self-respect.

An important part of learning is also how to learn to improve relationships within the organization. Employees must learn to take full responsibility for their failures and not blame others for their own mistakes. They have to be alert to detect all the changes that are coming and not wait until it is too late. They also should not hide behind group decisions. When we learn to master mutual relations, the organizational learning will improve substantially.

The biggest problem regarding knowledge transfer is that employees try to avoid responsibility for knowledge sharing and they hoard knowledge because it is a source of their power. When employees share their knowledge, they feel more vulnerable. In their point of view they have lost some value for the organization, for what they should be compensated in some way. Another important obstacle for knowledge sharing is lack of trust. Employees in many cases don't want to accept knowledge when coming from a certain person whom they don't trust. Therefore culture must change in order to create more trustful relationships among employees. Also an important question is how to make sure that knowledge that is shared is understood in the same way by all receivers. Knowledge receivers have to some extent different mental models, therefore they can interpret the same knowledge in different ways. This highly depends on the capability of an individual to learn and again how much he/she trusts the credibility of a knowledge source.

Another problem with knowledge transfer is when we try to disseminate knowledge that some employees have gained through attending a certain conference, seminar and alike. A very serious problem is how to get this knowledge to places where it can make a difference. Therefore employees should write a report about the learning event, add it to the knowledge base of the company and also suggest who might benefit from that knowledge. It is very difficult to establish the value that has been added by attending such learning activities. One way could be indirectly by tracking down the flow of ideas for new products, improvements, innovation and how they increase in number if certain employees are involved in some learning events.

Now, who can help managers to deal with all these problems? An important role goes to the human resource department that is responsible for employing the right people and helping to develop knowledge maps. On the other hand the company can also decide to employ a knowledge manager who will help to get the project started, enable necessary supervision over activities and influence the course of action to go in the right direction.

CONCLUSION

The paper addresses the increasing importance of organizational learning and knowledge management for today's companies. Theoretical concepts presented in the first few chapters help us create some understanding about the most important concepts like individual and organizational knowledge, intellectual capital, explicit and tacit knowledge, individual, team and organizational learning as well as the process of organizational learning and knowledge creation. Connecting these processes with our knowledge and understanding of organization and management, two important conclusions can be drawn. The first conclusion is that learning and knowledge creation happen in every organization and also heavily depend on it. Since learning can be oriented towards improving efficiency or innovativeness we can say that mechanistic organization is being focused on efficiency and organic organization on innovativeness. And the second conclusion is that knowledge management should in fact be divided into two processes. The first process is the organizational learning process that includes all the activities from knowledge creation to knowledge use. In order to benefit most from this process, all employees should be involved in it. The second process is managing a continuous learning process that includes the planning, organizing, leading and controlling of the organizational learning process and is therefore the job of the company's management. This process can truly be called knowledge management because it assures that the learning process is done in the most effective way. Both processes organizational learning and knowledge management as well as the extent and type of synergy they create in organizational knowledge however heavily depend on organization of a particular company, its structures and processes.

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