

## Original Article



# Knowledge Management in Commercial Companies

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## ABSTRACT

In this inquiry, knowledge management in commercial companies has been studied. In an age where knowledge determines the power and wealth of societies, knowledge management and transfer has become the most important task of societies and organizations. Organizations that effectively acquire, create, transfer and use knowledge, they can improve their activities and functions, whereas an organization without knowledge cannot organize itself and survive. Organizations are therefore determined to acquire knowledge and use it. Managers who make tough decisions are more likely to seek out experienced people than to constantly expose their knowledge to decisions instead of searching for information in databases. According to studies, managers obtain two-thirds of their information and knowledge by referring to writings and documents. Today, organizations are in dire need of increasing quality, value, service and speed in order to be able to expand in the market; this trend will certainly become more important in the future and will be considered as the biggest organizational competitive advantage in the global economy.

## Introduction

**K**nowledge transfer is a way to think about the organization and to share the intellectual, scientific, informational and creative resources of the organization. Knowledge transfer refers to efforts that use methods such as flexible structure, trust culture, learning strategy style and information technology to develop knowledge transfer and personalize it, and study this transfer in order to acquire new capabilities.

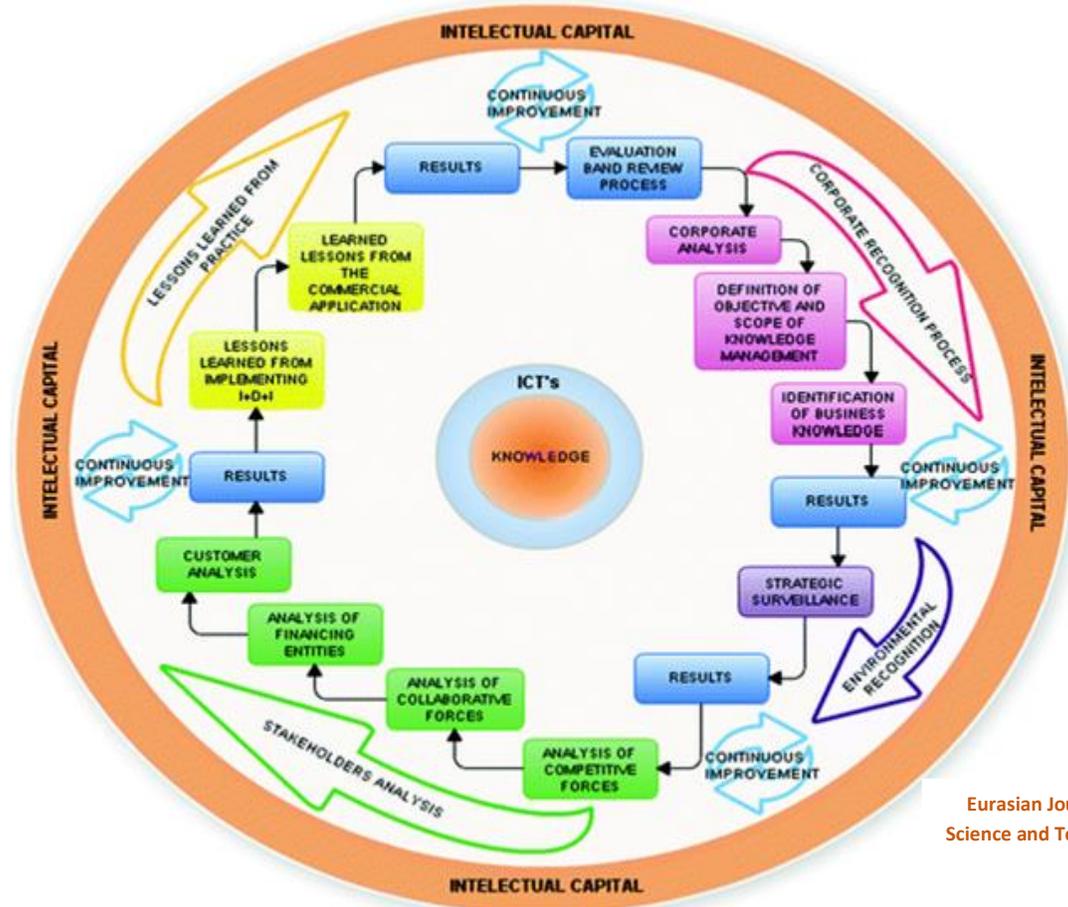
In such a situation, at least three main reasons for knowledge transfer are listed, including: Knowledge acquisition and reuse and knowledge creation [1]. Managers' attention to the category of knowledge and its transfer, knowledge staff and intellectual capital serves as a precondition for survival and success of organizations. The overall goal of organizational micro-management is to make optimal decisions, increase innovation and strengthen performance and sustainable competitive outcomes [2]. Creating such wisdom requires

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the constant creation of new knowledge and the transfer and interpretation of this new knowledge in the body of current knowledge of other parts of the organization [3]. Knowledge creation, especially explicit knowledge obtained by information systems and technology in the organization plays an important role in the process of formulating organizational strategies. But the creation and transmission of tacit or implicit knowledge is still considered a black box. The transfer and application of tacit knowledge and its impact on organizational innovation and performance is still unclear. Knowledge is not new, but its apparent acceptance as capital is a new understanding.

Today, the need to use knowledge in organizations to pursue strategic values has become more important. The effectiveness of

knowledge transfer is influenced by important organizational factors such as structure, culture, processes and IT strategy [4] despite numerous studies to establish the relationship between knowledge management and innovation, and also knowledge management and better organizational performance. The relationship between knowledge transfer and organizational performance and between innovation and organizational performance has not yet been clarified. By examining the direct and indirect effects of organizational factors on knowledge transfer in organizations, the current inquiry tries to fill the gap and also examines the relationship between knowledge transfer and innovation capabilities in services and products, as well as innovation in process and technique (Figure 1).



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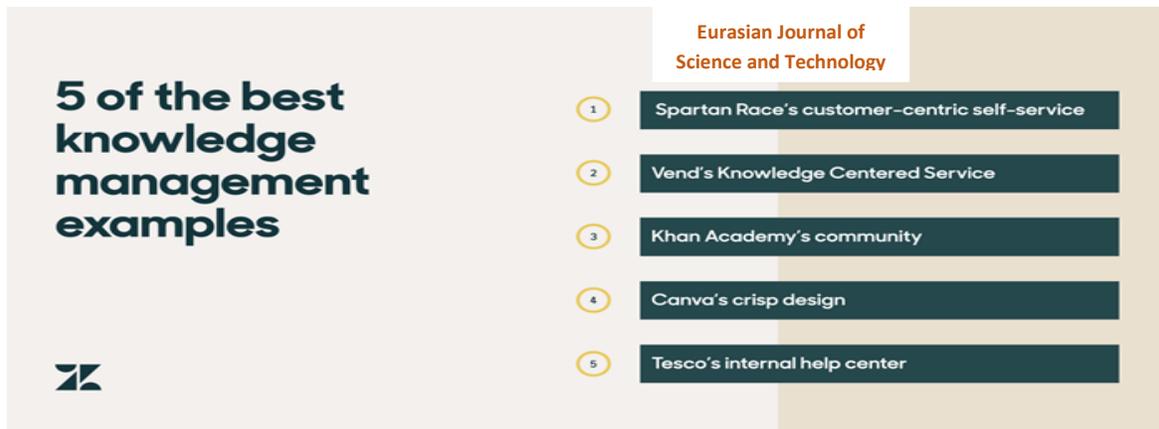
**Figure 1** Model Proposal of Knowledge Management for Technology Based Companies

*Theoretical Framework of Research*

There are two perspectives on knowledge management: The first view considers

information and knowledge as an object or thing that can be acquired, stored or transferred (implicit knowledge). The second view considers a process that is unique to each individual. In this study, the factors affecting the

transfer of organizational knowledge are: Learning strategy style, trust culture, flexible structure and information technology, which make a model for this purpose (Figure 2).



**Figure 2** Knowledge Management System Examples, Types & Tools

### *Organizational Factors*

While each organization has a unique environment, specific and important organizational factors such as strategy, culture and technology play a vital role in the overall performance of the organization. Questions related to how to process and transfer effective explicit and implicit knowledge and important organizational factors are the upgrade of this process. Factors such as organizational control; culture, education and training, processes and activities, leadership of human resource management policies; and networks are considered important.

The ability to effectively transfer knowledge in the organization is strengthened in the following ways: A structured IT network that enables individuals to promote knowledge; knowledge is transparent between individuals and groups and is supported by equal performance in relation to rewards and incentives; and a learning strategy through which organizations actively promote two-way learning. The need for a learning strategy that facilitates knowledge transfer and integrates learning and transfer in the analysis phase is supported by the knowledge management process framework. But in the relevant literature this gap exists.

Different factors affect the transfer of knowledge (explicit and implicit).

The key organizational factors selected for this study based on previous analysis are: IT systems, learning strategy, trust culture and organizational structure and design.

### *Definition of Knowledge*

According to the contemporary English Oxford Dictionary, "knowledge is the perception or familiarity gained from experience according to information" ... what can be recorded is knowledge. It is only a manifestation of it ... Where there is knowledge, the existence of someone who knows it is necessary; sheets of paper do not open anything (Table 1).

### *Personal Knowledge versus Organizational Knowledge*

Some researchers, such as Wake and Simon, (2011), believe that organizations do not have the ability to learn, and that most people in organizations learn. However, some researchers, such as Starkberg, Nelson, and winter (2019), believe that organizations evolve through their learning capabilities. Organizations learn and acquire knowledge

through their day-to-day documentation and programs that are in specific organizational

records. Coordinated and new knowledge is created by organizational records and culture.

**Table 1** Definition of knowledge

<b>Text, reality, code, image, sound</b>	<b>data</b>
Organized, structured, interpreted and summarized data	<b>Information</b>
Theorem, law, process, model	<b>Knowledge</b>
Accurate and explicit proposal, explanation and justification of results and reasoning	<b>Specialty</b>
Organizational allocation, knowledge store	<b>Ability</b>

In this view, the organization is considered as an element that faces the problem and solves it. In other words, the learning in the organization is greatly affected by the complexity of the tasks and its organizational environment. As noted, personal knowledge and organizational knowledge are distinct from each other; however, they are still interdependent. The size of each person's interactions with others depends on organizational culture [5]. We accept this view because in the current environment, people within organizations need to make quick decisions to solve customer problems. That is, instead of using rules and regulations as a hierarchically guided form of problem-solving, employees are forced to provide solutions to solve business problems. In other words, in complex situations, where organizational tasks are highly interdependent and employees cannot have the required level of expertise to solve interdisciplinary problems, sharing their knowledge and expertise requires the participation of others. Many of these types of tasks occur in professional companies, where people usually specialize in a particular field due to their educational and professional background. They can do it easily without the need to interact with others.

However, when the nature of tasks is complex and requires the coordination of expertise from areas across many disciplines, individuals need high levels of interaction with others in order to achieve organizational knowledge. One can use it to find solutions to a wide range of organizational problems, but still cannot make claims about the correctness of people's knowledge. Conversely, the organization itself is vulnerable to the changing specialties and

personal characteristics of professionals. Therefore, it is possible that even after employing a number of experts, they are still not able to fully realize their potential in solving complex and wide-ranging organizational problems. Knowledge sharing to solve complex problems is not synonymous with breaking down knowledge activities. What kind of knowledge is shared and how knowledge is shared is determined by professionals, not management? Unlike production-based activities, Knowledge activities are often unstructured and cannot be defined in detail. That is, the efficiency of knowledge activities is uncertain.

Thus, knowledge sharing is an option chosen and used by professionals, as opposed to the formal experience of structural activities imposed by management. Knowledge sharing is a social and informal process. In other words, how professionals process and share knowledge depends on their personal experience, creativity and expertise. Based on their experience and expertise, knowledge professionals decide who to interact with, and what knowledge to seek. He convincingly addresses the following issues:

Open competition with other companies, used to be rare in business, is now an accepted fact that executives know they need fast markets that are constantly being renewed by new capabilities. He adds: "Nowadays, when an oil company is looking to expand product sales at service stations, it hires managers from PC and Fritoli with retail expertise. Also, when an airline wants to improve customer relationship management, it hires executives from Marriott with Employs customer service expertise. The

above scenarios emphasize the importance of individual expertise.

In order to better understand the relationship between personal knowledge and organizational knowledge, we have provided a framework. To discuss goals, i.e. the nature of interactions and the nature of tasks, which are defined as two related and related linear concepts, we considered these important factors for knowledge creation in organizations. These two concepts provide four categories of knowledge as follows:

**Cell One** - In this cell, the level of interaction between employees is low and organizational tasks are daily. Under such considerations, this is particularly important in today's turbulent and dynamic environment, because the speed with which organizational issues are resolved creates competitive advantages for business. In such environments, it is possible for the organization to empower its employees to solve everyday problems immediately and to avoid referring problems to higher levels of the hierarchy in order to examine and provide solutions to them. For example, some telephone companies, such as at & t, have recently begun to allow their operators to provide immediate credit information to customers immediately due to communication and line breaks.

**Cell 2** - In this cell, the degree of interaction is low and the nature of tasks is non-routine and personal. Therefore, not everyone in the organization deserves to solve vague and non-routine problems, as performing these tasks requires high levels of expertise. Therefore, front-line employees are told to direct these unspecified issues and tasks to people in the organization who specialize in a particular field. BP, for example, communicated electronically with drilling and hardware specialists when faced with defects in its drilling equipment. High-magnification video cameras provide professionals with a picture of defective equipment that can quickly find solutions to problems.

Getting experts to know about specific tasks and problems is different from reporting non-routine and unspecified tasks to higher levels of

the hierarchy. Traditionally, each organization creates a set of systems that manage themselves to adopt and perform Enables action on exceptional cases. Today, most activities require special skills, which means directing unspecified tasks to the top of the unjustified hierarchy, as this only causes a delay in solving the problem. With this recent explosion, the World Wide Web, a number of companies have posted information about their specialists on the Internet that shows their names, specialties and phone numbers.

**Cell 3** - In this cell, the degree of interaction is high and the nature of the tasks is complex. To deal with these types of situations, employees constantly need to share their expertise and skills with others, because in this way they can unanimously coordinate their tasks. It depends. But the organization cannot impose rules of coordination and knowledge sharing. Since only part of the explicit knowledge is internalized by the organization and the rest by the employees, it will be important for the organization to find some similarities and similarities between these two types of knowledge and provide the necessary incentives for employees to participate, provide self-knowledge and strengthen and increase the content and themes of basic organizational knowledge. In highly competitive and dynamic environments, this type of knowledge that is relevant to a particular task cannot be easily identified.

Accordingly, most employees form their own informal professional community to provide the knowledge they need. Knowledge sharing is essential for large organizations and those that are geographically spread across different locations. By sharing knowledge in different geographical locations, it is possible for employees to increase knowledge as well as advance the collective understanding of the facts that arise from knowledge creation. They use it to share their knowledge and test their assumptions about new issues that are happening to the company's clients.

**Cell 4** - In this cell, the degree of interaction is high and the nature of the tasks is daily and clear. Therefore, most of the organizations follow formal rules and procedures. Most of the things

that happen to traditional organizations belong to this cell, where knowledge of reports and day-to-day organizational work is determined. These formal organizational rules, procedures, and structures ensure that the organization can frequently coordinate its tasks and work processes in an orderly manner.

### *Move between these cells*

Although we have shown that any organization can perform its tasks using the four types of knowledge as shown in Figure 1, this does not mean that the organization will never transfer some of its tasks and problems from existing cells to other cells. In an environment where accountability is a major aspect of competitiveness, a number of companies are shifting some of their tasks from cell two, which emphasizes personal expertise, to cell three, which emphasizes partnership.

In an organization, professionals play a key role in responding to organizational problems and challenges; however, as the organization grows and matures, the emphasis on expertise and skills will not be a sufficient tool to deal with problems, including the solution used by the organization to deal with this situation that is to create a collaborative atmosphere between members and use it. These reasons for bringing employees together to solve broad organizational problems are not based solely on economic issues, but also on a number of political issues that have challenged management's reliance on professionals.

### *The Role of Organizations in Creating Organizational Knowledge*

In an organization where the amount of interaction between members is low, most of the knowledge will be in the control of people instead of the organization. Nevertheless, a large part of knowledge within the organization is internalized through interactions and informal meetings between employees [5].

In other words, internalized knowledge is not only created in the organization by members of the organization but also interactions play a

significant role in its emergence. If personal knowledge is not shared with others, it will have little effect on the basic knowledge of the organization.

Therefore, one of the most important tasks of management is to facilitate interactions between employees and sensitize them to environmental stimuli, so that their personal knowledge is developed and internalized to help the basic knowledge of the organization [5].

### *Information Technology*

An information system, by definition, collects, processes, stores, analyzes, and publishes information for a specific purpose. The following is an example of a definition of information technology:

a) Technology or information technology refers to tools and methods that collect, store, retrieve, process, process and distribute information in various forms (audio, image, text) and

b) Information technology is the collection, organization, storage and dissemination of information, including audio, image, text or number that is done using computer and telecommunication.

Information technology is a branch of technology and technology that is dedicated to:

a) Data processing and use, including: automatic data collection and collection, data changes, data management, data movement and movement, data control, display, data exchange, data exchange, data transfer and reception, and

b) Development and expansion and use of hardware, software and software procedures related to this processing.

According to Lucas R's (2017), artistic definition of information technology is as follows: Information technology refers to all types of technologies used to process, store and transmit information electronically. For this purpose, equipment such as computers, communication equipment, networks, fax machines and any manageable electronic package are used.

Kit Bahan (2019) defines information technology as follows: Information technology is a set of tools, equipment, knowledge and skills that are used in collecting, storing and retrieving, and transmitting data. The term includes new technologies such as computers, fax transmission, micrographs, telecommunications, microelectronics, as well as older technologies such as document archiving systems, mechanical machines, printing and engraving (6).

### *Components of Information Technology*

There are four components of information technology as follows:

- a) Hardware: Hardware is physically tangible and includes processors, visual displays, diskettes, printers, *etc.*;
- b) software: Software includes operating systems and facilities with a user interface that gives the computer a special character or unique personality that is a necessary tool to meet the needs of the user and can include word processor, spreadsheets and soft packages;
- c) Facilities: Facilities are additional programs that support the main program. These facilities are divided into different categories; and
- d) Information technology: It includes physical tools and software that connect various components of hardware and send data from one place to another.

### *Applications of Information Technology in the Organization*

Technology plays a vital role in production and services. New and advanced technologies quickly replace past methods and provide superior goods and services and support. Information technology increases the amount of information available to organizations and individuals. Also, the volume of information in the organization is growing rapidly through the development of processing systems. In a way, it seems that the world is facing a phenomenon called information explosion.

Organizations and institutions have used information technology as a source for processing and accessing information, and this

technology has helped organizations to collect, maintain, and recycle. And the use of information has helped to solve its problems. In addition to transforming data into knowledge information, information technology has brought many competitive advantages to organizations, including the following:

- a) The impact of information technology is systematic;
- b) Information technology is completely pervasive and diffuse.
- c) Information technology improves lifestyle; and
- d) Information technology upgrades and transforms the tools used by humans.

### *Technology Transfer*

Technology transfer is an interconnected chain of intelligent activities and transfer is a process during which technology developed in a particular organization is transferred in order to do the same or another purpose [7].

### *E-learning*

E-learning is the use of various web-based or distributed technology tools for educational purposes. Other names are distance learning, on-line learning, educational management system, course management system, *etc.*; each includes different aspects of e-learning.

### *Personalization*

An organization that follows this method tries to communicate and transfer knowledge from one person to others. The reasons for this are similar to those for creating a database connection. But here the focus is on using knowledge to stay in the minds of employee's organization (7). Companies that use this method invest less in information technology than companies that create databases. Because the purpose of information technology is to facilitate conversation and knowledge exchange. In this way, knowledge does not become the capital of technology, but has the freedom of unconditional development in the organization. Companies that benefit from this method focus

on direct conversation of people and try to build social networks through which people in a way "Knowledge that is not encrypted - or cannot be - is transmitted through other means such as negotiation or networking." This method also facilitates the transmission of hidden knowledge because it reveals booklets and databases are difficult, "but they are easier to translate through interpersonal relationships.

Moreover, this approach is consistent with ideas put forward by people like Ergeris and Sanj (2017) about learning about pervasive organizations. Both emphasize the importance of employee freedom and accountability. This improved learning measures decentralization and open communication between people in the organization that is not restricted by the formal organization. The personalization strategy of this type of learning which provides individual communication and negotiation has enough space for new and diverse ideas. Odell and Grayson (1999) believe that learning and knowledge sharing are two social activities.

Social interactions focus on the interaction of individual behavior with learning, sharing and transmitting values, assumptions, insights, and cognition, and involve informal gatherings, social discourses and events, collective wisdom, networks and consultation programs. Without the flow of knowledge sharing, trust, honesty and intimacy between people, people cannot easily acquire and retrieve knowledge from social sources.

Thus, building trust by facilitating social interaction is a long-term strategy that requires managers who understand human behavior and transform organizational culture. Hence, the work environment must be full of trust and honesty. Studies by many researchers suggest that trust-based organizational culture motivates people to interact and share knowledge with others. It has major effects on other organizational phenomena, such as job satisfaction, stress, organizational commitment, and productivity despite the distinction between explicit and implicit knowledge, and the fact that synergy between the two is necessary and complementary to each other. Given that the organization alone is not able to create

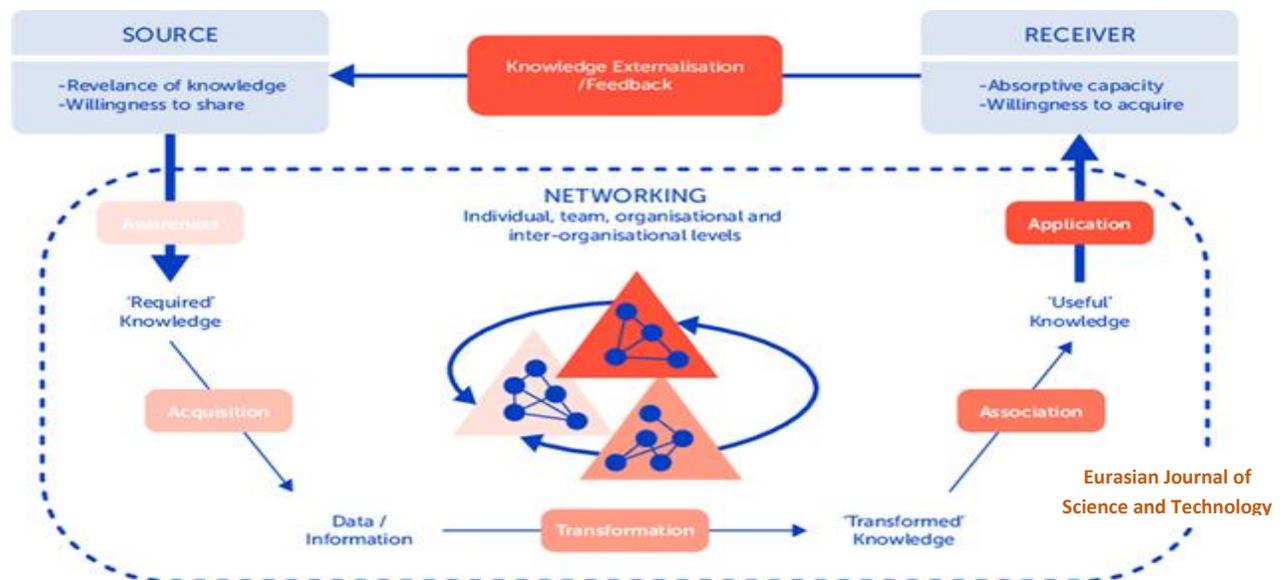
knowledge and the tacit knowledge of individuals is the basis of organizational knowledge creation, the group is obliged to integrate and move the tacit knowledge created and accumulated at the individual level and move it. It is throughout the group that the interaction between explicit and implicit knowledge takes place and, as Nonaco (2010) believes, it is the basis of knowledge creation.

### *Transfer and Application of Knowledge*

The primary goal of knowledge management is to ensure that valid and relevant knowledge helps to solve problems and make decisions in a timely and consistent manner. Therefore, timely transfer of correct knowledge to decision makers and problem solvers is crucial for the success of the organization. Knowledge transfer is not just about connecting to an information system or making it available to people who need it. Rather, the transfer of knowledge involves both the dissemination and absorption of knowledge. Information and capabilities are transmitted effectively when the recipient understands well enough to use them effectively and efficiently. The structure and working style of an institution has an important effect on the effectiveness of knowledge transfer. The transfer of personal knowledge is of great value, and private and non-formal education and information network can significantly contribute to the learning of the individual and the organization. Software companies offer products that automatically search, publish, enlist, retrieve, and process information (Figure 3).

Evaluating the available technologies, which enable knowledge transfer and select the appropriate technology, is part of the knowledge transfer capacity design of the knowledge management system. Technology is an enabler. But the vital issues in knowledge transfer are the culture of people's support. A culture of decision-making and knowledge seeking is clearly essential to the effectiveness and accountability of the information network and the growth of alliances between communities of knowledge agents. In addition, the culture of the institution should be highly valued for

motivating, actively learning the master of happiness and transmitting tacit knowledge.



**Figure 3** Process model on knowledge transfer

Transferring knowledge effectively has many benefits, and companies, so incur significant costs for effective knowledge transfer. In designing knowledge transfer capacity, the cost of transfer should be compared and divided by the cost of decisions made in the absence of relevant knowledge and the cost of knowledge left by individuals [8].

### *Sharing Knowledge*

In the traditional model, organizations and individuals are often reluctant to transfer and share the knowledge they have. Because instead of looking at knowledge as a resource, they look at knowledge as a source of power for personal gain and promotion. Most managers see knowledge as a source of influence and a guarantor of their job continuity and are reluctant to share it with others. An organization that supports information sharing and knowledge creation among its members defines more effective and efficient processes and improve its organizational performance. In an organization with a culture of knowledge sharing, people share their ideas and insights

with others. Because instead of having to do it, they consider it a natural process.

Therefore, there should be an incentive among the members of the organization to share knowledge in the organization without fear of losing their position. Cooperation can be defined as the degree to which individuals in the group actively help each other in their work. Existence of cooperation culture of the organization's employees increases, creates, exchanges, stores and uses knowledge. The culture of cooperation strengthens this type of exchange by reducing fear and increasing interaction between people. Supportive culture helps the members of the organization to use a supportive and reflective communication to gain a common understanding of the internal and external environment of the organization. Without a common understanding between the members of the organization, the knowledge management process is difficult.

Part of the knowledge is public and part of it is private. Although an organization can control and monitor public knowledge, it cannot control private knowledge. One way to control private knowledge by management is to create a team

environment and informal collaboration. In this case, the organization not only relies on the knowledge of its employees, but also creates new organizational knowledge. Through partnership and collaboration, the organization is able to provide shared collections to replace past knowledge with current knowledge to use in the process of continuous improvement and organizational initiatives [7]. Individual and organizational knowledge are separate, but interdependent. Individual knowledge is usually expressed through individual creativity and self-expression. Organizational knowledge emerges in the products and services that are produced in the organization and offered for sale to customers.

An individual's expertise in an organization is an asset, but if the management does not carefully develop the individual's expertise, the individual statements themselves become the organization's debts. Therefore, management must create an environment that encourages employees to collaborate and share knowledge. This action will lead to raising the knowledge of employees and creating organizational knowledge through individual interactions.

Although an organization can use the expertise of individuals to find solutions to organizational problems, it cannot claim individual knowledge. In contrast, the organization becomes vulnerable to the transfer and ethical characteristics of specialists, so the organization may open its full potential to solve complex organizational problems even after hiring a group of specialists. Knowledge sharing to solve complex problems is not synonymous with the breakdown of knowledge-related activities. What kind of knowledge is shared and how it is done is determined by professionals, not managers? In addition, unlike production-based activities, not all work features can be defined in detail. It is not the result of knowledge-focused activities. But success in it often leads to innovation and progress. Knowledge sharing is therefore an option that is used differently by different professionals. Contrary to the formal classification of work structures applied by management, knowledge sharing is an informal and social process. In other words, the way

knowledge is shared by professionals reflects their expertise, experience, and personal creativity. Based on their expertise and experience, experts decide with whom and how to interact, as well as what knowledge to seek. Beth Vakapli (2000) states this convincingly:

Free competition for members of other companies is an accepted fact today. Executives have realized that today's fast-paced markets need fast-paced organizations that are constantly innovating and innovating. Today, when an oil refinery wants to increase sales of its products, it hires managers from Pepsi and Fritoli who specialize in retail. When an airline wants to improve customer relationship management, it hires managers from Marriott with customer expertise and experience.

People usually talk to each other face to face, either by phone or e-mail, in groups to share their expertise and solve problems. Knowledge flows in society and profession and skills are passed down from one generation of experts to another. Most of these flows take place informally, through unwritten interactions, customs, stories, and in slang. When such networks have enough common knowledge to be able to communicate more effectively and collaborate, naturally, their current discussions sometimes lead to the provision of new knowledge within the company. Although it is difficult to codify this practice, this process can increase the knowledge of the whole company.

Knowledge is created and maintained jointly, not individually, in groups that are closely related to one another and where individuals work together in organizations. Therefore, organizational knowledge is considered as a social personality. In fact, what companies do is to organize and cultivate knowledge. A common problem with most knowledge management programs is that people do not publish their knowledge. When people work virtually on a global network and have a common problem, they need a cultural change in the organization. They need to apply the level of organizational change over a period of time as follows [9]:

- a) Leadership by allegory;
- b) Connecting learning to everyday processes;

- c) Update and debate fortune telling; and
- d) Rewarding systems.

Effective learning and knowledge sharing requires cultural change within the organization, new managerial performance, senior management commitment, and technical support. Technologies that are now being used successfully include a wide range of desktop video conferencing, e-mail, document management systems, Internet networks, artificial intelligence tools, search engines, data storage and data mining tools. However, in knowledge management, technology has a minor aspect compared to humans.

### *Creativity and the Growth of Innovation*

Today, with the complexity of competition, innovation is considered as one of the main advantages for the life of organizations. All organizations need new and innovative ideas to survive. A new and innovative idea is blown like a soul in the body of the organization and saves it from vanity and annihilation. The advent of knowledge enlightenment not only enables organizations to gain a competitive advantage over competitors but also provides a useful tool for improving organizational performance. Knowledge as a major source of innovation and organizational productivity is extremely important. The main goal of knowledge management is to create and organize an environment in which people develop their knowledge, exchange it with each other, combine the knowledge of others with their own knowledge, and finally apply it. The application of knowledge in turn will lead to innovation in the organization, which is another manifestation of change, increasing the speed and intensity of innovation. The emergence of fundamental changes takes place in two ways: One through formal research and development, that is, separately from the normal production of goods and services, and the other through on-the-job learning so that people learn through doing things and then evaluate and systematize what they have learned, taking them for steps next use. This method can be a very effective form of

knowledge production in many professions. The significant increase in investment in innovation, not just research and development, has led to a sharp increase in the number of innovations. The symbol of this is determined not only by increasing the number of registered royalties, but also by increasing the number of new goods and services offered to the market.

At the same time, practical learning environments seem to be expanding, and work environments are emerging from a machine atmosphere that reduces the opportunity for learning in the workplace. This climate change, in turn, increases the possibilities of knowledge production [10]. Knowledge management is a specific organizational and systematic process for acquiring, organizing, and maintaining the application, dissemination and production of explicit and implicit knowledge of employees in order to increase organizational performance and value creation. Creativity is the use of mental abilities to create a new idea or concept, or the ability to combine ideas in a unique way or to create connections between ideas.

Creativity is a human process that leads to a new and useful result, i.e. solving a current problem or satisfying a need. Innovation is the application of new ideas resulting from creativity, which can be a new product, a new service or a new way of doing things. It is the process of perceiving or creating relevant knowledge and turning it into improved or new products and services for the people who want it.

### *Types and Principles of Innovation*

**Continuous innovation**, which involves brief changes in behavior or product;

**Dynamic continuous innovation**, which involves a fundamental change in consumer behavior with minor changes in the product;

**Continuous innovations**, which bring about a fundamental change in consumer and product behavior;

**Fundamental innovation**, which leads to the creation of new markets;

**Product Development Innovation**, where companies try to increase the use of this new product;

**Technology Reconstruction Innovation**, which refers to technology reconstruction requirement of importing materials or equipment from other industries to produce any new product;

**Innovation in naming and advertising product labels**, which involves creating a desire to buy a particular product. Research shows that about 24% of product sales come from advertising;

**Process Innovation**, which allows the company to gain advantages over competitors, which include increasing the speed of the production process and increasing the flexibility of production from one product to another;

**Design innovation:** One of the most important issues in design is flexibility, which means that the product can be adjusted according to market conditions and changing consumer interests;

**Innovation in the field of reformulation**, which involves changing the structure of the current product without changing its components;

**Innovation in service delivery:** Studies show that the cost of attracting a customer is seven times the cost of retaining it, so innovation in service is one of the most important issues in competition; and

**Innovation in packaging:** Changing packaging generally changes the amount of goods purchased or the amount of use in a period of time and the opening of new markets on that product.

Some of the most important principles of innovation are all ideas are subtle and valuable, so it deserves an environment where all ideas flourish and thrive. Also, the creator of the idea needs helps to promote the idea, in other words, the creator of the idea must be supported by a supporter.

Further, new innovative products are necessary for the survival of the company. And,

idea innovators are the main and basic factor of company growth [10].

In 2000, in response to globalization and knowledge-based economic change and to achieve its goal (promoting innovation among member countries and becoming the most dynamic knowledge-based economy in the world), the European Union announced national innovation indicators in four groups:

a) **Human resources:** The amount and quality of human resources are the main determinants of the creation and dissemination of new knowledge throughout the economy;

b) **new knowledge creation:** Indicators related to knowledge creation measure the capacity and inventive status of countries;

c) **transfer and application of new knowledge:** This area covers informal innovative activities such as the adaptation of serious equipment for the company's service and production systems, the adaptation of innovations developed by other companies or organizations, and the adaptation of new knowledge to the specific needs of the company; and

d) **Finance and innovation outputs:** This category includes the following indicators. Supply of high-tech venture capital, sales of innovation and etc.

Today, innovation in the current technological environment is essential for organizations and most organizations are looking for creating new ideas. In this regard, the organization's experts are trying to move from knowledge to offer new products or services that customers want, and create an infrastructure where innovation is like a continuous learning process, because the goal of knowledge management and the secret of survival of today's organizations lies in innovation. Knowledge management experts believe that innovation mechanisms and knowledge management processes are adaptable.

### *Management Processes and Knowledge Transfer with Innovation*

The knowledge management system must use activities or processes in order to achieve its goals. In this regard, various processes are presented that according to the activities and processes expressed can be combined in the following format.

#### *Knowledge Creation Process (Creativity)*

At the first stage of the broad stages of the knowledge management process, knowledge in the organization is created in a distinct individual. Personal knowledge, when applied to the organizational context, creates new knowledge that can be called organizational knowledge. The collective knowledge cycle arises from the application of personal knowledge in the context of the organization, which can also be called organizational knowledge. Organizational knowledge includes various types of product knowledge, process knowledge, competitive knowledge, technical knowledge, etc.

#### *Knowledge Acquisition Process*

The process of knowledge acquisition is essential to meet current and predictable future needs and achieve goals effectively. Knowledge can be acquired through various mechanisms. In order to identify the mechanism of knowledge acquisition, it can be divided into two categories: Source within the organization and source outside the organization. The internal source of knowledge acquisition is in the minds of employees (implicit and explicit knowledge) or the organization's database encoded in the form of information. External source of knowledge acquisition, which introduces new knowledge into the organization, is done in two ways:

#### *A- Modeling*

In this method, the organization identifies excellent operations from the perspective of competitors and sets their success as a model. For this purpose, it compares and evaluates its

current situation with their criteria. Gaps are identified and solutions are designed. New knowledge enters the organization as a measure of the success of the reference organization.

#### *B- Inter-Organizational Cooperation*

In this method, new knowledge enters the organization through the sharing and dissemination of technology, the transfer of employees between organizations, communication with partners, and so on.

#### *Refining Process*

The organization should use logical mechanisms to prevent the entry of unnecessary knowledge and only useful and usable knowledge should be allowed to enter the organization. To achieve this goal, the management team of the organization can use the insights, missions and goals of the organization to provide a framework for evaluating knowledge.

Organizing process (configuration or integration)

In this process, the organization must store and organize a large body of knowledge after its entry into the knowledge base for use. The organizing process can take place anywhere in the organization that Alavi (2009) has listed these places as follows:

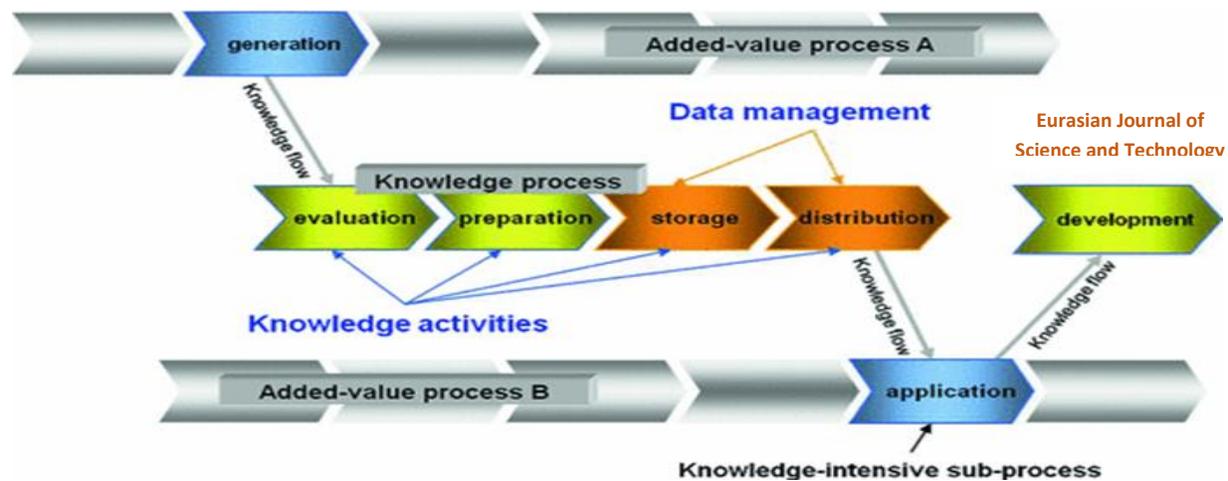
- a) Organizational memory;
- b) Persons;
- c) Organizational culture;
- d) Learning methods, understanding thinking, feeling, sharing and transmission between members of the organization;
- e) Processes and procedures;
- f) Ecology: physical locations; and
- g) Archives (digital and paper).

The ultimate goal of this step is to help members of the organization gain access to the knowledge needed in decision-making processes.

### Knowledge Distribution Process

This process is the distribution of knowledge to the points of activity and even beyond, outside the organization. Numerous factors, including communication facilities and organizational culture, can contribute to this process. Regarding communication facilities, Buckman (1998) states that one of the main purposes of knowledge management is to facilitate communication in all areas of the organization

so that members of the organization can work together to identify hidden challenges and opportunities. Regarding the importance of culture in organizational knowledge and its dissemination, it can be said that culture leads to the creation of synergistic harmonizing environments. If values and culture in an organization encourage learning and knowledge building, all the functions of the organization will change (Figure 4).



**Figure 4** Knowledge Management in Product Development

### The Process of Applying or Exercising the Power of Knowledge

From the perspective of most researchers, including Pfeiffer and Sutton is the most important process. They use it in practice. If knowledge is not turned into action and organizational activities are not based on the knowledge of the organization, all activities and processes of knowledge management are sterile and ineffective. The application of knowledge bridges the gap between knowing and acting, and creates an important link between feedback, learning by doing, and application. The process of applying knowledge also makes it possible to create an underlying learning scenario from the application of knowledge, although learning in this way is very difficult, but it is very important in creating knowledge, because it requires meta-analysis and evaluation of processes. Organizations are forgotten. Pfeiffer and Sutton

(2000) suggest three approaches to the application of knowledge:

- Creating a subdivision in the organization that is free from existing disadvantages and at the same time loyal to the old ways;
- Creating an atmosphere in which the members of the organization are continuous and question the procedures of the organization; and
- The efforts of the organization's leaders to create a culture that encourages the application of knowledge.

However, knowledge alone is not an important resource for the organization. Knowledge is not for knowledge, but knowledge is important for action and performance improvement. Thus, at the heart of knowledge management is innovation, because there is a sustained competitive advantage in innovation (Table 2).

**Table 2** Relationship between knowledge management processes and innovation mechanisms

knowledge creation	- Motivational rewards / stimuli
	- Introducing change: views, groups, environment
	- Cultural, organizational and group evaluation
	- Temporary acceptance of anything: teams, organizations, procedures, production lines
	- Rejection of core beliefs and values (personal and organizational)

As mentioned earlier, innovation is the application of new knowledge to deliver new products and services that customers want. Knowledge innovation is action or knowledge, and as it is born of knowledge, it has all its characteristics. At the same time, innovation prevents the stagnation of knowledge and its stagnation. It also delays the movement of knowledge in the opposite direction. From an economic point of view, innovation is significant because innovation can bring entrepreneurship to the organization and society.

Thus, today, innovation is essential for the life of organizations in the dominant technology environment of the 21st century, and they must be constantly innovating in order to survive. Achieving this goal requires the re-establishment of knowledge management as the main capability of the organization. Knowledge management has two parts: Knowledge management and increasing the ability to create new knowledge. Knowledge creation and learning, the second part of which emphasizes the definition of knowledge management, is to increase and facilitate the innovation process.

To this end, organizations use mechanisms that support the processes of knowledge creation, sharing, and integration. Innovation is therefore a goal of management and knowledge transfer, and the two are so intertwined that the mechanisms of innovation and the process of knowledge management can be adapted. Table 2 shows the relationship between knowledge management processes and innovation mechanisms developed by Albers and Brewer (2009). In this case, there are different and diverse strategies and mechanisms, and at the end of this section, we will present some examples of strategies that are more directly related to innovation:

**a) McCain and Company Strategy:** Dee and Nedler (1998) from McCain and Company identified five knowledge strategies used by large companies:

**a.1) Develop and transmit best practice:** This strategy emphasizes identifying the best practice within the organization and disseminating it across all work networks and situations. Creating new skills from existing knowledge in the organization. This strategy refers to the reorganization of knowledge.

**a.2) Shaping the knowledge group strategy**

**a.3) promoting and commercializing innovation**

This strategy focuses on creating a competitive situation by increasing technological innovation and reducing the time to market.

**a.4) creating a standard by transferring exclusive knowledge**

**b) Knowledge management continuum "Bin Ni"**

According to Bin Ni (2001), knowledge management strategy is in six groups. An ongoing knowledge management strategy helps organizations create diverse meaning and focuses on knowledge management processes and activities.

**b.1) Executive knowledge management**

Knowledge is embodied in technology.

**b.2) Knowledge Management Analysis**

Knowledge is obtained from external data sources and its focus is on customer information.

**b.3) Knowledge Management Asset Management**

Explicit knowledge asset management allows knowledge to be reused in a variety of ways.

#### **b.4) Knowledge-based management**

It includes coding, modifying and modifying business operations, sharing and disseminating processes within the organization.

#### **b.5) Developmental knowledge management**

It aims at empowering the talents of the organization's knowledge workers through skills training and staff growth.

#### **b.6) Knowledge Management Innovation and Creativity**

It focuses on creating an environment that enhances creativity or the creation of new knowledge. For example, through research and development, forming teams from different disciplines.

In general, the organization should create an atmosphere in which the open exchange of knowledge and innovation is emphasized so that employees are more willing to exchange their new knowledge with each other and use it.

#### *Methodologies, Comparisons, and Experiences*

New technologies allow organizations to use knowledge management systems to store and transmit and disseminate unstructured information. Today, there is a growing interest in the field of knowledge management and transfer in organizations and academia. Due to the emergence of this issue, there is a lack of standard and specific packaging in relation to knowledge management implementation models in research and organizational resources.

In this regard, this dissertation describes, analyzes and evaluates the proposed models of knowledge management, which are classified into three main areas, namely knowledge classification models, intellectual capital models and social structure models.

Then, some examples of models for implementing knowledge management system in organizations that are the result of research reports in this field are examined. Knowledge is the first strategic resource for companies in the

21st century. Researchers and experts are trying to figure out how knowledge resources can be effectively collected and managed so that they can be used as a competitive advantage. Therefore, before undertaking the implementation of management plans and knowledge transfer, organizations need to evaluate their organizational subsystems and existing resources to identify the most important and best strategy for implementing knowledge management. Knowledge management is not new; civilization from generation to generation has maintained and transmitted knowledge to understand the past and predict the future.

In today's complex and dynamic business environment, the thirst for knowledge is gaining momentum and depth. Knowledge is changing rapidly and is spreading outside of organizations. Information technology and the Internet have also created new challenges in the creation, maintenance and management of knowledge. In the 1980s and 1990s, philosophies, approaches, and methodologies for improving business continued to evolve. This development is due to the combination of business activities and scientific theories in recent decades. Topics such as organizational learning, learning organizations, total quality management, reengineering, business process, etc. are examples of these new approaches. A review of the literature shows that topics related to economics, intellectual capital, engineering approaches (flexible industrial production systems), knowledge media, computers, organizational studies, anthropology, and sociology (epistemology) include learning, situational cognition, and psychology. Cognitive, aspects related to artificial intelligence, issues related to human resources, etc. have been discussed in this field.

#### *Intellectual Schools in Knowledge Management*

Expressing the meaning of any topic can be useful and effective in clarifying the scope and depth of that topic. In some cases, it is very difficult to express the concept. Accordingly, many definitions of knowledge management include the management of knowledge creation,

interpretation, dissemination and use, protection and maintenance and refinement of knowledge. The complexity of this discussion is not the relationship between knowledge and information and information technology, but the closeness of this concept to topics such as psychology and the business of knowledge (11).

Knowledge management is an activity whose tactics and strategies are considered for managing human capital. A brief look at the definitions of knowledge management reveals that knowledge management is related to theory and practice (ibid., P. 98). The key question in the field of strategic management is how the organization achieves and sustains competitive advantage. In the traditional approach, the attractiveness of the selected industry and its position against competitors was the most important competitive advantage (10).

Due to the increasing uncertainty and dynamism in organizational environments, the focus of new strategic research is on the "structure-behavior-execution" model as the main key to competitive advantage. Grant (2009) adds that the change reflects dissatisfaction with the stillness and balance of traditional approaches and leads to an internal vision called the organizational resource-oriented perspective. This view makes organizational capital and capabilities as the main sources of competitive advantage. In this view, a distinction must be made between source and ability.

Organizational resources include tools and equipment, skills, patents and liquidity are the most important sustainable competitive inputs. Based on the knowledge-oriented view, many theorists have made suggestions regarding organizational capabilities. Based on the above texts, it is inferred that organizations will need to acquire knowledge from outside. Accordingly, Cohen and Lunital (1999) have emphasized the characteristics of the ability to absorb external information as a new value. The collection and transfer of organizational knowledge can be done by providing knowledge from external sources and internal creation.

Management models and knowledge transfer express a wide range of perspectives described in the texts. The description of these models can be used in structural projects and organizational functions of knowledge management. Management and knowledge transfer models should be used with caution. In this research, different aspects and perspectives have been examined. In most sources, management and transfer of organizational knowledge, three types of models are mentioned: 1- Knowledge classification models, 2- Intellectual capital models, and 3- Organizational social structural models.

### *Knowledge Classification Methods*

These models consider knowledge as a separate element. For example, the Nonaka and Takayuchi (2009) model shows a high-level conceptual representation of knowledge management and considers knowledge management as a process of knowledge creation. According to this model, knowledge is composed of objective and tacit elements. Implicit knowledge is a non-verbal, intrinsic. In this model, it is assumed that tacit knowledge can be transferred to the tacit knowledge of another person through the process of socialization and become objective knowledge in the process of externalization.

Also, according to this model, objective knowledge can be transformed into tacit knowledge through the process of internalization, and through objective integration and dissemination, it can be transformed into another objective knowledge. Of course, knowledge transfer is much more complex than Nonaka's proposed simple matrix and cannot be easily interpreted in the new knowledge management paradigm. The displayed version is an optimal version of this model in Nonaka and Headland's (2018) model. According to this model, there are four different levels of knowledge carriers or agents in organizations (ontology axis), which include individuals, small groups within the organization or outside the organization, the main customers, suppliers, competitors, and so on. Another model proposed in this field is

Boycert's (1997), according to which he divided organizational knowledge into compiled, unedited, published, and unpublished knowledge. Formulated knowledge is knowledge created for the purpose of transfer, such as financial data, and unedited knowledge is knowledge that is not easily transferable, such as experience, published knowledge is knowledge that is ready to be shared, and unpublished knowledge is considered only as personal knowledge (perception, perspective, experience).

Edited and unpublished knowledge can only be transferred in small groups based on the "need to know". Only compiled and published knowledge can be accessed through magazines, books, and libraries. Common sense considers unpublished and unedited knowledge. This type of knowledge is based on Boyerster's (2018) opinion in the process of slow and slow dressing, habits and intuition. There are many similarities between the Nonaco's and Boycert's models.

Perhaps the latest model proposed in this regard is the Luster's (2007) model, indicating that individual knowledge is the starting point for the creation of organizational knowledge. Information is the raw material of individual knowledge that forms the basis of organizational knowledge. As Davenport (2018) puts it, individual knowledge emerges from a combination of information, interpretation, reflection, and experience in a particular situation. To create organizational knowledge, individual knowledge (objective and tacit) must be externalized. Organizational knowledge is created by combining these two dimensions. Individual knowledge must be transferred to other individuals and groups to improve organizational knowledge. The transfer of individual knowledge to organizational knowledge occurs through socialization, externalization, internalization, and integration. This process can occur from person to person, from person to group or within groups. The last two can be more effective for knowledge transfer. This concept model has 6 stages:

a) Creating a common meaning or perspective on the goal of knowledge development;

b) Preparation of information;

c) Creating an internalization process to create individual knowledge;

d) Transforming individual knowledge into group learning;

e) Disseminate knowledge to other levels of the organization; and

f) Practical aspects of knowledge [12].

In summary, these models examine the process of knowledge transformation, although some of the processes mentioned in it are very mechanical and formal.

### *Intellectual Capital Methods*

A number of knowledge management models are categorized in this category. One of the most famous of these models is the model offered by Scandinavia. This model proposes a practical approach to knowledge that can establish a link between organizational assets. Scandinavia is the first company to consider the activities and philosophy of the company's intellectual capital in its annual report. In this model, the social aspects of knowledge management are ignored. This model is mechanical in nature and it is assumed that knowledge can be placed next to other assets.

### *Social Structure Methods*

Models are inherently linked to social and learning processes in organizations. Despite many similarities, these models try to seek to express the concept of learning organization or organizational learning. In this model, four key dimensions of knowledge management are emphasized:

a) Knowledge structure in the organization is not limited to scientific information in the organization but also includes the social structure of knowledge management;

b) the premise of the model is that the knowledge structure in the organization is not only provided through objective programs but can also be the result of a social exchange process;

c) there is a supportive process of knowledge dissemination in the organization and the organizational environment; and

d) economic use of knowledge from organizational outputs.

The use section of this model is limited to the organization's outputs and does not include liberating advances. These factors can be considered as complementary rather than as a collective barrier. Two-way arrows indicate that knowledge management is not a simple, linear process. The social structure of knowledge is one of the basic parts of knowledge management.

Success factors in this area are identifying what is known as knowledge in the organization and how this knowledge grows in the organization and its employees. Nonaka and Takoyuchi (2016) called this part of knowledge management "organizational knowledge creation." There are two different paradigms regarding the structure of knowledge. The first paradigm is the existence of a practical view of knowledge or a view of "knowledge versus truth," in which knowledge is presented as fact and wise laws. Second, what pertains to the social paradigm of knowledge structure can be socially structured based on employee interactions. Knowledge structure in terms of scientific and social paradigms should be considered in the visualization and dissemination of knowledge as part of the knowledge management approach in the organization. Many organizations fail to visualize and disseminate knowledge because they only pay attention to the approaches of the scientific paradigm and are socially inattentive to the paradigm of structure (ibid.).

In this model, the main goal of knowledge management is "use". Damrast (1993) has described use as "generating business value for the customer," while Wilkinson and Wilmot (1994) have argued that business improvement methods should be developed to meet the goals of mutual support for expanded business and employee productivity. Innovation is one of the keys to usefulness and use in knowledge management. Henry and Walker (1991) have linked it to "new knowledge" or "new structured

knowledge." New knowledge can be scientific-technical or social. Benefiting from the "status and professional status" of staff scientists can include giving them status.

#### *Multi-step Concept Method*

In the model proposed by Lee and Kim (2001), it is assumed that knowledge management and organizational ability grow through the four stages of initiation, dissemination, integration, and networking. These stages are theoretically alternating in nature but are hierarchical in terms of tree growth and development. Many theorists believe that knowledge management as a management process should lead to fundamental changes in individual and organizational behaviors. Accordingly, organizational ability as a result of knowledge management includes the accumulation of organizational knowledge and a degree of organizational ability that grows in the form of an S-curve (Table 3).

#### *Implementation Methods and Knowledge Management System*

Technical knowledge in knowledge management emphasizes objective knowledge, which is easily acquired and formulated. While experience and judgment show the implicit and abstract aspects of knowledge that are difficult to formulate and capture. As stated in the definition of knowledge management, the primary goal of knowledge management is to understand its value. To achieve this goal, there is a need for a knowledge management implementation system to facilitate the production, maintenance and sharing of knowledge. The success of knowledge management systems also depends on the effective use by users. There are many studies in the literature on the factors of success or failure of knowledge management systems.

The knowledge management system provides the necessary infrastructure for organizations to implement knowledge management processes. Different models of management systems believe that there is a knowledge management system. But as Chit (2005) argues, it should

include key elements of organizational knowledge capital, including:

**Table 3** Conceptual model of multi-stage development of organizational knowledge management

Linking knowledge management with external partners	Integrate knowledge management efforts and organizational success	Activities and infrastructure for knowledge activities	Preparing for group knowledge management activities
Internal and external analysis	Assess the effectiveness of knowledge	Knowledge management process	
Knowledge Management Productivity	Examine changes in environmental needs	Build a reward system	Disseminate knowledge management needs
Communicating knowledge with partners		Development, training programs, internships and retraining	Knowledge management evaluation
Share knowledge management views and goals with partners	Review and control knowledge management activities	Development of knowledge morphology	Build and share knowledge management views and goals
Management link with partners	Define and focus on key areas	Building a knowledge management system based on group knowledge	Evaluate the criteria by conducting pilot projects
Facilitate and manage knowledge sharing within the organization and partners	Disseminate the best knowledge management activities	Directing events towards activating knowledge activities	the beginning

1. Information about the skills and knowledge of employees that strengthens the ability of the organization.

2. Information about the organization's customers.

3. Information regarding the tools and methodologies of the organization in order to perform quality and effective service activities.

4. Information about the activities and groups in the organization.

Building knowledge management systems or knowledge-based systems with the help of databases, intelligent systems technology and communication systems are common examples in this field.

However, the use of this technology-oriented approach has enabled organizations to integrate and use their knowledge resources, especially in relation to the objective knowledge available in the organization.

## Conclusion

Knowledge management is not just the formation of learning groups, or the installation

of a military to manage electronic resources, but also a management paradigm that affects people and other resources involved, such as organizational culture, culture, information technology, and so on. Regarding what should be managed, some of them are mentioned in the texts related to knowledge management, including knowledge, management process, scholars, honest human-based communication, information technology, knowledge culture, axis, flexible organizational structure, performance measurement tools and reward system. It is very difficult to manage all of the above. While some of the above are not only extensive but also very complex to manage.

For example, communication based on truth and correctness as an organizational culture requires attention to other management structures such as management, leadership, power and motivation. The managerial elements that affect scientists include leadership, power, performance appraisal and reward system, organizational structure and culture. Organizations can simplify the knowledge management process by specifying rules and regulations and creating the teams they need. To

improve people's knowledge, organizations can use self-study programs and work methods to improve the quality of their human resources. Some organizations have their own knowledge typology and through it they systematically manage their organizational knowledge resources. Some of them have created knowledge repository systems for this purpose and use it with the help of communication channels such as the Internet and search engines.

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