ÇANKAYA UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
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MASTER THESIS

ANALYSIS OF ORGANIZATIONAL LEARNING: A RESEARCH ON INFORMATION AND COMMUNICATION TECHNOLOGY INDUSTRY IN ANKARA

ALMULA UMAY DEMİRTAŞ

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Title of the Thesis : **Analysis of Organizational Learning: A Research on Information and Communication Technology Industry in Ankara**

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ABSTRACT

ANALYSIS OF ORGANIZATIONAL LEARNING: A RESEARCH ON INFORMATION AND COMMUNICATION TECHNOLOGY INDUSTRY IN ANKARA

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Since technology develops and is widespread in every aspect of human life, the firms are inevitably affected by this process. At this point, knowledge management is a fundamental value in technology-based firms because these firms use intensively knowledge management as "learning organizations". Organizational learning has substantial role in the effective implementation of knowledge management.

The purpose of this research is to measure the relationship between organizational learning activities and selected demographic and firm related factors with a knowledge management perspective. To do this, selected factors such firm's age, location, the area of activity and owner's education level and work experience in selected technoparks of Ankara province are taken as identifiers. The research was conducted to 110 managers and owners of small and medium sized information communication technology-software firms in Ankara. According to the study results, there is a significant relation between organizational learning activities and firm's age and work experience from a knowledge management perspective in related firms.

Keywords: Organizational learning, Learning Organization, Knowledge Management

ÖZET

ÖRGÜTSEL ÖĞRENME ANALİZİ: ANKARADA BİLGİ VE İLETİŞİM TEKNOLOJİ ENDÜSTRİSİ ÜZERİNE BİR ARAŞTIRMA

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Teknoloji, insan hayatının her alanında gelişip yaygınlaştığı için firmalar da bu süreçten kaçınılmaz olarak etkilenmektedir. Bilgi yönetimi, tam da bu noktada teknoloji odaklı firmalarda önemli bir değere sahiptir. Çünkü, bu şirketler "öğrenen organizasyonlar" olarak bilgi yönetimini yoğun bir şekilde kullanmaktadır. Örgütsel öğrenme, bilgi yönetiminin etkili bir şekilde uygulanmasında önemli bir role sahiptir.

Bu araştırmanın amacı, örgütsel öğrenme faaliyetlerinin belirli demografik ve firma ile ilgili faktörlerle olan ilişkisini bilgi yönetimi perpektifinde ölçmektir. Bunun için, Ankara ilinde seçilmiş teknoparklarında bulunan firmalarının yaşı, yeri, faaliyet alanı, firma sahiplerinin işyeri ve eğitim seviyesi gibi belirli özellikler ele alınmıştır. Araştırma, Ankara'nın küçük ve orta ölçekli bilgi iletişim teknolojileri-yazılım şirketlerinde 110 yönetici ve şirket sahiplerine yapılmıştır. Çalışmada elde edilen sonuçlara göre, ilgili firmalarda bilgi yönetimi perspektifi açısından örgütsel öğrenme faaliyetlerinin bilgi iletişim teknolojisi ve yazılım firma sahiplerinin iş tecrübesi ve firmalarının yaşı arasında önemli ilişkiler bulunmaktadır.

Anahtar Kelimeler: Örgütsel Öğrenme, Öğrenen Organizasyon, Bilgi Yönetimi

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Ankara, 2017

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LIST OF ABBREVIATIONS

LO	Learning Organization
OL	Organizational Learning
KM	Knowledge Management
H	Hypothesis
Tech	Technology
IT	Information Technology
IS	Information System
ICT	Information Communication Technology
ATDA	Association of Technology Development Area

CHAPTER ONE

INTRODUCTION

1.1. OVERVIEW

Today, the concept of organizational learning (OL) and knowledge management (KM) are focused in the context of contemporary management activities. As long as the firms constantly evolve, organizational learning notion becomes more demanding and fundamental in the context of knowledge management structure.

Above mentioned relation between organizational learning and knowledge management is indicated in different aspects by various researchers. For example, Pilar et al. (2005) in Liao and Wu (2009) underline knowledge in particularly, its creation with, its dissemination and integration in the organization and substantial resource for organizational learning. Organizational learning can be seen as having fundamental resources, competitive advantage, efficiency and development for the organizations (Marshall et al, 2009; Schein, 1996) in Sisnuhadi (2014). Moreover, it can be estimated that the concepts of organizational learning and knowledge management have a significant importance for information communication technology and software firms. Since these firms have high innovative capabilities, skills and make usage of intellectual assets as well as follow new technology, they might depend intensively on organizational learning and knowledge management practices in accordance with organizational goals.

Taking into consideration of the effects of dynamic environments where organizations survive, increasing pressure for knowledge management also

increases. In order to maintain the existence of the firms for survival purposes, one of the ways of improving efficiency in general term is knowledge management practices. In fact, many firms may maintain a special management system which has useful knowledge in both of inside and outside within the firm in order to survive in competitive environment. In this sense, it can be assumed that knowledge has a strategic value for the accomplishment of individual and organizational goals to be able to survive in dynamic environments. Omotayo (2015) states that knowledge management is advocated as significant and essential factor for sustainability and competitive advantage. Grant (1996) in Kumar, Jain and Tiwary (2013) states that knowledge is recognized as fundamental resource for organizations which are located in dynamic environments. Therefore, accurate and reliable knowledge constitutes the basis of success for competing firms.

On the basis of literature, researchers indicate various relations with organizational learning and knowledge management. Firms need to manage organizational learning and knowledge management activities for efficiency and productivity. In this context, research findings indicate various firm benefits derived from these two notions. Examples include; organizational learning and knowledge management have influenced on organizational effectiveness as stated by Fani, Fard and Yakhkeshi (2015). Moreover, knowledge management can be considered as a complementary tool with learning which is necessary for accomplishment of organizational or individual tasks in technical terms. Without knowledge management, firms cannot improve individual or the team learning skills (Garratt, 1990, Su, Huang, and Hsieh, 2004) in Liao and Wu (2009).

Furthermore, leaders have significant functions to perform both in internal and external situations shaped by knowledge management activities and organizational learning process within the firms. Gilaninia, Rankouh and Gildeh (2013) underline that leaders are responsible for setting organizational structures, cultural characteristics, interactions among workers and measuring different effects. Kumar, Jain and Tiwary (2013) indicate key role of leaders as providing knowledge creation activities for managing knowledge and building competitive advantage in any organizations.

In this context, organizational learning has significant value for implementing knowledge management activities in ICT/Software firms. Since these firms use knowledge intensively and are mainly technology oriented, knowledge management implementations together with organizational learning are an important path to be followed for firms' success. It can be estimated that the contributions of knowledge management and organizational learning is value creation for success. Accordingly, keeping in mind that ICT/software firms are knowledge intensive; and are constantly engaged in innovation, technology development and R&D activities, knowledge and learning are vital resources in order to accomplish value-creation based organizational purposes. Bielawska (2008) implies that knowledge is a strategic asset for high tech companies in terms of managing in an influential way. She implies that high tech companies are learning organizations in terms of process of what is acquired as information, development and application of knowledge.

In the light of what is stated above, this study mainly deals to discover the dimensions of organizational learning's relation with knowledge management practices. The study is composed of three main parts. In the first part of literature review, learning organization and organizational learning concepts are defined. The second part of literature is about knowledge management including knowledge types, form of knowledge process, dimensions and relationship with organizational learning as well as behavior of leaders. Relationships between knowledge management and information communication technology/software (ICT/Software) firms are discussed. Finally, in the last part of literature, Templeton's (2002) organizational learning model with regard to Huber's (1991) knowledge management perspectives is explained.

In the third part, the study focuses on research design. Templeton's (2002) organizational learning instrument which was developed and inspired on Huber's (1991) knowledge management perspectives for measuring the links with the firm's age, place, the area of activity and manager's education level as well as work experience are mainly used for the analysis. Additionally, there are two demographics which consist of respondents of education level, work experience and firm-related dimensions such as firm's age, place and area of activity. In the fourth

part of the study, the research findings are discussed. Organizational learning constructs with regard to knowledge management practices are observed. In the last part of the study, conclusion, limitations and further researches are presented.

CHAPTER TWO

LITERATURE REVIEW

2.1. LEARNING ORGANIZATION

There are various descriptions of learning organization. In knowledge perspectives, Scott (2011) defines learning organization as a process by which is adopted by members acquire knowledge as acting and reflecting together in terms of individual and collective behaviors. He indicates that knowledge can be captured in accordance with organizational features and effect on individuals and groups in learning. In this sense, learning organization can be regarded as a process which acquires knowledge through members by learning. Additionally, Yang, Watkins and Warsick (2004) define learning organizations as building learning capability in terms of understanding of internal drivers. In this context, learning organization can be seen as shaping learning skills among members. Furthermore, Skuncikiene, Balvociute and Balciunas (2009) underline learning organization as environment in which members constantly learn. In accordance with that it can be deduced that learning organization creates a climate in which employees acquire information in a sustainable way.

When firms uniformly grow for their improvement, they might need to advocate as learning organizations for sustaining new knowledge and achieving the competition, therefore, learning, can be considered as a key factor for sustainable development of the company. In this context, Serrat (2009) states that better and faster learning has crucial importance for desiring success of the company. He also implies that strategy of learning and inspiring vision of learning helps to achieve organization's vision. Additionally, Ang and Joseph (1996) identify a learning organization has particular characteristics of an organization with ability to learn.

Senge (1990) implies dimensions of learning organization as systems thinking, personal mystery, team learning, building shared vision and mental models in his study of "fifth disciplines". Having in mind that this stance closely deals with structure-related components; learning organizations can be considered as having shared vision, creativity, by creating and using knowledge resources, improving learning capability, interactions, communications among members and adaptation of technology based activities. Concerning the characteristics stated, learning organization can be recognized as one of the ideal form of organizations.

Learning organizations have also significant benefits for using knowledge resources and intellectual capital in terms of their competitive advantage. For example, Dimovski and Penger (2004) imply that learning organization construct their competitive benefits under knowledge structure and intellectual capital which reflect solely economic resource of contemporary organization. Serrat (2009) implies that learning organization is comprised of knowledge and knowledge sources in order to manage the organization itself. Therefore, intellectual capital is mainly based on human capital as knowledge asset including external and internal experts such as suppliers, customers, partners and so on. In this context, intellectual capital can be assumed as a crucial asset for managing knowledge resources in the learning organization.

Additionally, learning organization has also other important characteristics in terms of behavior of the leaders in order to manage similar organizations. For instance; McClure (2002) implies that leaders create constantly learning atmosphere in learning organization. According to Garvin, Edmondson and Gino, (2008) leaders can be only considered such these clear vision, right incentives among employees and lots of training for preparing their firms to learning. Moreover, leaders in learning organizations enable to create culture for development of organizations and employees for increasing learning competencies. Here, Bass (2000:20) states that "in the organization's building phase, they must be more creators of culture". In this sense, it can be deduced that training efforts stands at the forefront of the learning organization's leader agenda. Therefore, leaders can build organizational structures, values and create ideal atmosphere, setting goals, incentives, and training as well as

developing knowledge sharing strategies among members for creating learning environment.

2.2. ORGANIZATIONAL LEARNING

There are different dimensions of organizational learning (OL). Ang and Joseph (1996) define organizational learning as process or activities where organization enable members to learn.

First dimension of organizational learning involves experience. For example organizational learning defined by Senge, (1990) in Nafei (2016) as a constant experience and its conversion in knowledge convenient to all organization and concerned with their mission. Moreover, Marsick (1999) indicates organizational learning as a process that facilitates and enables to achieve organizational outcomes by learning from previous experience. Previous experiences include; improved problem solving skills, constructed knowledge structures, reshaped behaviors as well as improved learning abilities among members.

Besides being an experience, the second dimension of organizational learning is also related with interpretation and usage of learning outcomes. Bush (2006) underlines organizational learning as process of adaptation in direct with usage of learning in an organization. Day (1994) in Scott (2011) defines organizational learning as a process that is related to improving open-minded inquiry and informed interpretation. In fact, information interpretation can be assumed as significant when new norms, values or skills are acquired as individual keeps learning in an organization.

Furthermore, there are certain differences between organizational learning and learning organization concepts. Senge (1990) in Villardi (2001) assert that organizational learning is a process that is formed in learning organizations. ‘’Organizational learning is existing processes while learning organization is an ideal form of organization’’ (Örtanblad, 2001: 125). Learning organization may facilitate

the process of organizational learning. For example; Gilininia, Rankouh and Gildeh (2013) indicates that learning organization enables to improve organizational learning in terms of creating structures and strategies. Thus, the idea of organizational learning can be assumed as a process that enables the organization to complement significant activities in accordance with organizational outcomes. However, the idea of learning organization has some characteristics in terms of learning capability, shared vision, and structures based on knowledge. Therefore, it can be intuited that organizational learning process occurs in learning organizations.

Notable researchers also underline organizational learning process from a knowledge management (KM) perspective. Kim (1993) in Villardi and Leitão (2001) defines organizational learning as ‘’know how’’ and ‘’know why’’ in comprehension of thinking and action. Know-how is a technical expression to describe applying knowledge. Therin (2010) defines organizational learning as set of competencies in accordance with collecting, using internal and external knowledge produced by companies. Based Slater and Narver (1995) in Fani, Fard and Yakheshi (2015), organizational learning is divided into three; information acquisition, information dissemination, and shared interpretation. Pham and Swierczek (2006) in Fani, Fard and Yakheshi (2015), organizational learning is comprised of three process; knowledge acquisition, knowledge sharing and knowledge use. Additionally, Sisnuhadi (2014) underlines that firm’s competency to preserve, retrieve and use to new knowledge have crucial part in organizational learning. Therefore, knowledge management can be regarded as a process that is comprised from capture, storage, sharing and application of knowledge in accordance with organizational goals in an organization. In this context, it can be estimated that organizational learning and knowledge management is a complementary tool for reaching organizational outcomes.

Additionally, firm related dimensions such as age, sector and area of activity have effect on organizational learning in terms of creating knowledge, improving innovative capability, performance and using experience in an effective way. Cagle (1988) has considered work experience and education level as element that specify the style of manager and performance in Kotur and Anbazhagan (2014). In this way,

work experience and education can be considered as significant construct such these fields; performance, training, compensation and so on. Zahra (2003) underlined that firm age specifies the ability to innovate directly because of collected experience and knowledge in Noordin and Mohtar (2014). Hui, Radzi, Jenatabadi, Kasim and Radu (2013) underline the importance of age and size of the firm enable to development of organizational learning, organizational performance and organizational innovation. McDaniel, Schmidt and Hunetr (1988) underline the importance of differences between high and low complexity jobs on the experience and performance relation.

Additionally, there are also conflicting views about characteristics of firms age and organizational learning in terms of managing knowledge and improving capability of the firm. For instance; Sinkula (1994) argues that older firms have better entry to knowledge than younger firms in Nybakk (2012). In contrast, Kapelko (2006) underlines that older firms are not rapidly to adaptation to surpassing barriers for innovation in Noordin and Mohtar (2014).

There are also various organizational learning approaches from different researchers in literature. For instance; Argyris and Schön (1978) in Steininger (2010) categorized organizational learning as single loop, double loop and triple loop learning. They define organizational learning as detecting and correcting error in general. Single loop learning is detecting and correcting errors among members in the organization but maintaining theory- in use (Argyris, Schön 1978). In single loop learning, organizational values, behaviors are defined. Human beings learn as their governing values or variables for detecting and correcting problems in simple way (Argyris, Schön, 1978). In double loop learning, organizational structures, behaviors and values are reshaped and problems do not occurred. Argyris (1978), states that double loop learning can occur under frameworks of single loop learning under significant situations in an extensive way. Triple loop learning can be called as deutero- learning. Steininger (2010) states that deutero-learning is previous learning which is related to organization learning to improve its learning process. That means, deutero learning can be defined as combination of single and double loop learning in an extensive way for building and reshaping structures, values, behaviors and skills in an organization.

Furthermore, Watkins and Marsick (1993) examined organizational learning as individual, group and institutional/organizational level. Watkins and Marsick (1993,1996:7) in Marsick (1999) underline these levels as (1) creating continuous learning opportunities; (2) promoting inquiry and dialogue; (3) encouraging collaboration and team learning; (4) creating systems to capture and share learning; (5) empowering people toward a collective vision; (6) connecting the organization to its environment; and (7) providing strategic leadership for learning (p.7).

Another important finding belongs to Templeton, Lewis and Snyder (2002) who define organizational learning according to eight dimensions such as awareness, communication, performance assessment, environmental adaptability, intellectual cultivation, social learning, intellectual capital management, organizational grafting in knowledge structure according to their internal and external influence on environment in an organization. In the last part of literature review, these approaches will be explained in detail.

2.3. KNOWLEDGE MANAGEMENT

2.3.1. Concept of Knowledge and Knowledge Management

Today, technology is significant part of the daily life. If people's brain is assumed as “human technology”, it can be imagined the importance of knowledge as a crucial part of human life. As technology in general terms is increasingly popular, it can also be envisaged that competition will be inevitable for enhancing organizational outcomes in accordance with applying knowledge as a field of implementation.

With the change from traditional communities to knowledge communities, acting knowledge can be considered as one of primary importance in success and improvement of business in communities (Gelard, Boroumand and Mohammadi,

2014). In this context, communities can be regarded as significant actors in business for creating and implementing knowledge.

Knowledge and knowledge management are currently considered to be the most significant resources of the firms (Gelard, Boroumand, Mohammadi, 2014). On the basis of literature, researches have defined knowledge as competitive advantage, strategic resource and new vision perspectives for organizational outcomes. Knowledge can be regarded as one of the basic tools for reaching competitive advantage in accordance with organizational outcomes. Thus, it can be assumed that knowledge is fundamental resource for companies to develop and act desired goals.

2.3.2. Types of Knowledge

Knowledge can be acquired in different forms for implementing steps of knowledge management cycles. Szakaly, (2002) expresses type of knowledge in two pieces being as open and tacit both in terms of classification of applied knowledge in an organization. Additionally, according to Nonaka (1995) knowledge is divided into tacit and explicit knowledge. It can be considered that type of knowledge has crucial value for description of knowledge management cycle.

2.3.2.1. Tacit Knowledge

Tacit knowledge is the personal and specific knowledge which occurred in human mind, behavior, and perception (Duffy, 2000) in Omotayo (2015). Dalkir (2011) states that tacit knowledge is hard to articulate and insert in words. Tacit knowledge is sometimes called as implicit knowledge. Implicit knowledge includes factors such as experiences, ideas, insights, intuition, scientific expertise, know-how, the insight of individual about industry, diagnosis power about business and technical expertise (Sohrabi, Tabatabaei, Hajifarajzadeh and Aqdam, 2015: 575).

It can be considered that tacit knowledge is based on human's skills, values, beliefs or capabilities. This type of knowledge is complex and hard to define because tacit knowledge resides in human beings. It's personal knowledge that is depended on behavior of members. It can be imagined as cognitive that includes mental models, behaviors, beliefs and so on.

2.3.2.2. Explicit Knowledge

Explicit knowledge is described as documented in structured, fixed content, externalized, and conscious (Duffy, 2000) in Omotayo (2015). Szakaly (2002) imply that explicit knowledge is easy to code and store.

It can be regarded that explicit knowledge can be defined as understandable and structured knowledge. This knowledge is understandable and easy to codify information such as documents, papers, procedures, rules, principles and written notes in the aim of created information.

2.3.3. Nonaka's Knowledge Management Model

Nonaka and Takeuchi (1995) states knowledge management model as socialization, externalization, combination and internalization as part of KM creation process in terms of explicit and tacit knowledge.

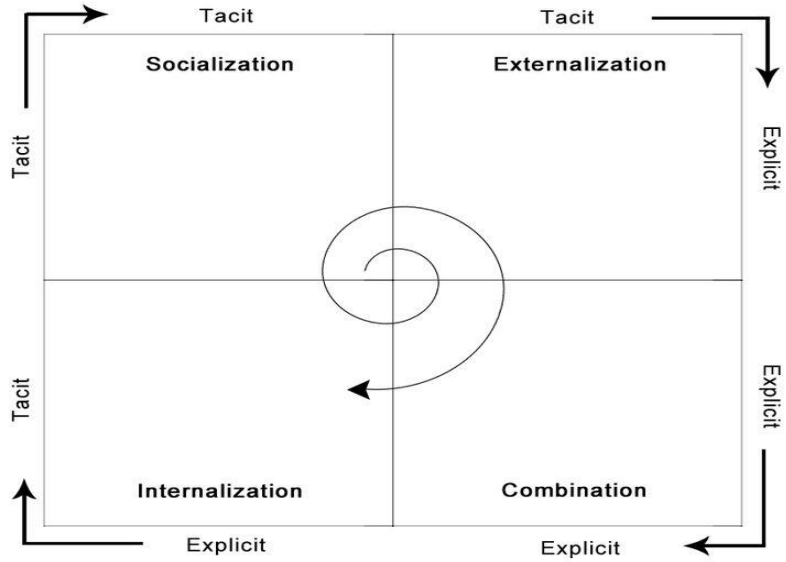

Figure 1 SECI Model (Nonaka& Takeuchi, 1995)

According to the Figure 1, components of Nonaka & Takeuchi model are as follows;

1-Socialization (from tacit knowledge to tacit knowledge): According to Nonaka, Toyama and Konno (2005), tacit knowledge can be acquired through shared experience by interacting among members in the firms. In the socialization process, knowledge can be formed as tacit since its complex and occurred in human mind. Socialization can be assumed as in general such as informal meetings, interactions which occurred in human mind by means of shared experience in the firms.

2-Externalization (from tacit knowledge to explicit knowledge): In the externalization process, tacit knowledge can be converted into explicit. Nonaka, Toyama and Konno (2005) underline that the converted explicit knowledge can be considered as new knowledge in the base of knowledge conversion. It can be exemplified as written documents, images, concepts (Nonaka and Toyama, 2003).

3-Combination (from explicit knowledge to explicit knowledge). According to Nonaka, Toyama and Konno (2005), explicit knowledge can be occurred in complex form by means of collecting in both inside and outside of the firm as a result it can be formed as a new knowledge. In the combination process, knowledge

can be transferred by means of computer based networks (Nonaka and Toyama, 2003).

4-Internalization (from explicit knowledge to tacit knowledge) According to Nonaka, Toyama and Konno (2005), explicit knowledge can be converted into tacit knowledge by means of individuals in the base of shared things in the firms. They underline that internalization process can be jointly related to 'learning by doing'. It can be exemplified as functional departments.

2.4. KNOWLEDGE MANAGEMENT CYCLE

Knowledge management (KM) cycle is a process that is identified by capture, storage, sharing and application of knowledge for implementing steps of knowledge management. Therefore, KM cycle can be attributed as "knowledge in action", therefore should be considered in a proper way.

Effective knowledge management depends on using internal or external knowledge sources in a proper way for implementing steps of the cycle, whereas, it also helps creation of satisfactory internal and external transparency and support for members according to Probst (1998). It can be estimated that one of the significant benefits of KM cycle implementation is to deal with external environmental uncertainty and related lack of information. As complex environment push organizations to cope with the effects of different forces such as change, adaptation and rivalry, organizations have to keep on acquiring information in order to prevent failures. In the opposite case, Probst (1998) states that this lack of transparency cause to unproductivity, unknowing decisions and unnecessary activities.

However, knowledge management cycle does not only benefit in external environment but also internal environment. King (2009) states that the purposes of the knowledge management are the fostering and the development of the firm's knowledge resources to effective implemented knowledge cycles, enhanced organizational behaviors and effective decisions as well as advanced organizational

performance. Similarly, Rao (2014) expresses that knowledge management is generally based on achievement of organizational purposes such as improved performance, competitive advantage, sharing lessons learned, innovation and development of the organization.

In terms of internal environment, King (2009) defines knowledge management cycle is comprised from activities including planning, organizing, motivating and controlling of members, processes and systems within the firms to provide its knowledge assets are enhanced as well as influentially used. In this sense, knowledge management cycle may enable organization for implementing better knowledge practices. Therefore, knowledge management cycle can be assumed as an enabler to achieve desired organizational goals related to performance, managing intellectual assets, human capital, dealing with complex environments and processes of organizational learning.

On the basis of literature, there are many researchers express that knowledge management cycle or process in different approaches. Bhatt (2001) in Fani, Fard and Yakheshi (2015), indicates knowledge management cycle is identified as creation, validation, presentation, distribution, and application. According to Filius (2000), knowledge management cycle is divided into knowledge creation, acquisition, documentation, transfer and application. Seng, Zannes, and Pace (2002) in Crawford, develops knowledge management process in five steps; capturing, storing, processing, sharing and using knowledge. Additionally, Seng, Zannes and Pace's model (2002) is mainly used from researches for implementing knowledge management in effective way. Seng, Zannes and Pace (2002) in Crawford underlines knowledge management process in five steps as shown in Figure 2.

In the capturing stage, record steps include solving a problem. In the storing stage, the captured information is stored in database or other systems. In the processing stage, the knowledge can be processed sorting, filtering, organizing, analyzing, comparing, correlating and mining the knowledge. In the sharing stage, the knowledge transfers via information systems or interactions. In using stage, the problems solve and enhance in accordance with the purposes in an organization.

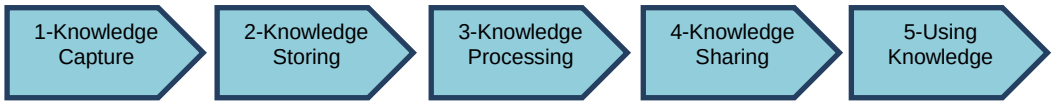

Figure 2. Seng, Zannes And Pace's (2002) Knowledge Management

For Pinto (2005), knowledge management process is related to knowledge creation, storage and retrieval, knowledge transfer and application. According to the researcher, knowledge creation is based on exploration of new knowledge. Knowledge storage and retrieval is storing and organizing information. Knowledge transfer refers to dissemination of knowledge in terms of experience among members. This enables to achieve members to share their knowledge in an organization by means of interactions and communication. Knowledge application is the process of knowledge storage and retrieval system. Crafword states knowledge using as problem solving process deeper in accordance with organization's purposes. Selected different approaches with a general view of KM cycles are summarized in Table 1.

Table 1. Summary of Knowledge Management Cycle

Researcher	**Year**	**Summary of KM cycles**
Barth	(2003)	Accessing, evaluating, organizing, analyzing, conveying, collaborating, securing
Pinto Lopes et al.	(2005)	Knowledge creation, storage and retrieval, transfer and application
Seng,Zannes and Pace	(2002)	Capturing, storing, processing, sharing, using knowledge
Dalkir	(2011)	Knowledge capture and/or creation, knowledge sharing and dissemination, knowledge acquisition and application
Filius et.al	(2000)	Knowledge creation, acquisition, documentation, transfer and application
Lee et al.	(2005)	knowledge creation, accumulation, sharing, utilization and internalization

2.5. STEPS OF KNOWLEDGE MANAGEMENT CYCLE

Knowledge management cycle can be considered as significant part of the knowledge management steps in terms of its identification and application. Rao (2014) highlighted that the importance of knowledge management cycle is fundamental precondition for body of the process of knowledge identification and knowledge use. In that steps of KM cycle are as below:

2.5.1. Knowledge Capture

Knowledge capture can be considered significant part of knowledge management as acquiring or creating new knowledge. Ceptureanu S and Ceptureanu E. (2010) imply that knowledge capture or creation is main and beginning part of the usage of knowledge management. There are certain descriptions in line with knowledge capture. Dalkir (2011) states that knowledge capture is division between recognition of existing new knowledge and creation of new knowledge. Knowledge capture can also be perceived by researchers as “acquisition” of knowledge. For example, Karadsheh, Mansour, Alhawari, Azar and El-Bathy, (2009: 70) state that knowledge acquisition process based on exploring the required knowledge such as ‘’buying, consulting, researching and development and self-creation” which in fact underlines the multidimensional characteristics of knowledge capture process.

In knowledge capture, knowledge can be acquired or created from different sources. These sources can be assumed as; suppliers, customers, external partners for organizational operations.

Huber (1991) states that many organizational operations are achieved as a result of acquiring knowledge. Dalkir (2011) implies that knowledge acquisition can be identified as transfer of beneficial expertise from a specific knowledge source (such as human expertise, documents) to knowledge archive (such as organizational memory which can be later used as a repository to develop organizational routines).

2.5.2. Knowledge Storage

In an organization; main goal of the storage process is to preserve knowledge by coding information and reutilizing it. In this stage, the information can be collected and stored through documentation process since knowledge documentation facilitates to organization for storing, re-using and helping to use of knowledge and experiences.

Considering the importance of knowledge storage process, various activities and resources located in organizational memory can be envisaged. For example, the storage involves coding and indexing of knowledge for later recovery and provides a better understanding of knowledge as stated by (Karadsheh, Mansour, Alhawari, Azar and El-Bathy, 2009). Sisnuhadi (2014) states organizational memory as a mechanism which stores knowledge for using in future. Fani, Fard and Yakhkeshi (2015) indicated that organizational memory involves sources such as written documents, structured information and some organizational procedures as well as activities. Makinen and Huotari (2004) states organizational memory include explicit and tacit knowledge which distributed and collective resources such as documents, databases, reports, knowledge, process, structure and culture.

2.5.3. Knowledge Sharing

Knowledge sharing is the process that transfer created knowledge to individuals in accordance with organizational purposes. Knowledge sharing is involved in exchanging knowledge from individuals to another (Karadsheh, Mansour, Alhawari, Azar and El-Bathy, 2009). Then, created knowledge must be shared among members so as to serve for the future (Sohrabi, Tabatabaei, Hajifarajzadeh and Aqdam, 2015).

Considering the significance of knowledge sharing in mind, it can be perceived that knowledge sharing process distributes the information or data to more than units or departments. This also enables transfer of explicit and tacit knowledge

in an organization. There are many ways for distributing knowledge in an organization. For instance; people share ideas, values, and beliefs through electronic networks or interactions. Probst (1998) states that technical knowledge distribution supports efficient knowledge exchange and related to separated experts via electronic networks.

Additionally, it can be imagined that people share opinions, interpret and transfer them as a result of learning new things. When people in an organization share, comprehend and interpret, they may also bring new dimensions on shared information. Sisnuhadi (2014) states information interpretation as the process which results in creating shared understanding from information distribution.

2.5.4. Knowledge Application

Knowledge application is key and last step of the knowledge management cycle because the success of application is mainly due to acquisition and distribution of knowledge, therefore, these steps should be achieved in sequence. Knowledge application might provide to regulate some procedures and methods in the organization.

In knowledge application process, there are certain benefits to acquire information for using knowledge in such significant activities including acquiring results and improving performance concerning organization's desired goals.

Kayani and Zia, (2012) state that usage of acquired information in daily activities of group and organization for much better future output. The utmost goal of knowledge management is knowledge application for enhancing organizational performance (Sohrabi, Tabatabaei, Hajifarajzadeh and Aqdam, 2015).

However, there are different views on benefits of knowledge applications as using learning tools. For instance; Dalkir (2011) implies that relationship between knowledge management applications and e-learning or technology mediated

learning. Ramirez and Kumpikaite (2012) state that knowledge application is dynamic and partly process of continuous learning. Fani, Fard and Yakhkeshi (2015) state that knowledge application permits to members to use of acquired knowledge in the organization for their objectives.

2.6. KNOWLEDGE MANAGEMENT AND ORGANIZATIONAL LEARNING

Organizations and researchers have increased attention to organizational learning. Liao and Wu (2009) imply importance of learning to cope with environmental uncertainty and competition for the company. Ang and Joseph (1996) mention organizations which have learning ability becomes more competitive in a dynamic environment. Khandekar and Sharma (2006) in Hsu (2014) stated organizational learning as a crucial way that indicates success and growth of the firms. As already mentioned organizational learning enable organizations to cope with uncertainty and being survival in dynamic environment as well as sustainability of growth for competitive benefits.

Considering the fact that importance of organizational learning, there is also various insights into knowledge management. Both organizational learning and knowledge management are links between improved rational capitals and human capacity and their ability accomplishment for effective measures (Fani, Fard and Yakhkeshi, 2015). Organizational learning can be comprised from knowledge creation, acquisition, and collection in accordance with the aim of resource and capacity improvement which enables better performance of the firms (Perez Lopez, 2005) in Saki, Shakiba and Savari (2013). Organizational learning can be assumed that provides effective use of organizational resources in knowledge management and reach to organizational outcomes for having more competitive advantage, overcoming uncertainties, improving human capital qualities, and performance in general terms.

On the basis of literature, organizational learning is significant driver of KM. Easterby-Smith and Lyles (2003) in King (2009) indicate organizational learning is a

process that is related to knowledge management which organization creates, acquires, and finally uses in process. Farsan, Rizi, Azadi and Aroufzad (2013) indicate learning as an essential process in which transferred and applied information and knowledge is generated.

Additionally, organizational learning permits to provide influential use of knowledge resources and enable creativity and innovation. Valaei and Aziz (2012) states that learning is enabler of creativity and innovativeness in accordance with knowledge creation process in the organization.

There is increased attention from many practitioners that knowledge management has significant insight into organizational learning. For example, according to (Garratt, 1990, Su, Huang, and Hsieh, 2004) in Liao and Wu (2009), without knowledge management, organizations can not enhance personal and group learning competencies Lyu, Zhou and Zhang (2016) state that knowledge application and knowledge creation develops organization's learning and growing capacity. Creating and transferring knowledge enable opportunities for organizational learning among members in the organization (Ravanpykar, Fyzi and Pashazadh, 2014). Keshtmand and Hatami (2016) indicate role of knowledge management has crucial influence on supporting organizational learning due to the fact that it simplifies impressive sharing of acquired knowledge in the organization.

2.7. LEADERSHIP RELATIONS WITH KNOWLEDGE MANAGEMENT AND ORGANIZATIONAL LEARNING

Without behavior of leaders, knowledge management process cannot be accomplished in an influential way. Regarding this, leaders may have vital role for fulfillment of the tasks, controlling members who accomplish their duties in properly and solve to problems which is essential factors for implementing knowledge management activities.

Leaders have crucial responsibility for managing knowledge such as acquiring, transferring and controlling them. For instance; Crawford and Strohkirch (2002) underline behavior of leaders in knowledge management as (1) creating and implementing policies, (2) responsibility in collection of data and (3) distribution of knowledge. Dalkir (2011) implies that behavior of knowledge manager provides knowledge acquisition and management of internal and external knowledge. Kok (2003) states role of knowledge leader is a demonstration that significance of knowledge in future welfare in the organization is identified.

Additionally, leaders have also several responsibilities and skills for accomplishment of knowledge management for problem solving skills, decision making, motivating, communication, coordination, encouraging and so on. For instance; Greengard (1998) in Singh (2008) considers that senior managers must be known that the importance of knowledge management and its supportive function and crucial role in decision making. Crawford and Strohkirch (2002) underline behavior of leaders in knowledge management as encouraging among members to become being a learning society and share knowledge and provide directions that are related to organizational outcomes. Furthermore, leaders are also responsible for communication, coordination and connection in knowledge management. Kok (2003) highlighted that behavior of leader is in charge of improvement of knowledge management budget and promote necessary knowledge resources for their effective usage.

As in knowledge management, leadership behavior has the same and fundamental tasks in organizational learning. Leaders promote remarkable insight in learning and knowledge in terms of their implementing, designing and monitoring under learning structure, setting directions of improvement of learning and knowledge process upon organization's assets as well as assist to improvement of learning skills (Imamoglu, Ince, Keskin, Karakose and Gozukara, 2015). Leadership in knowledge organizations is particularly relevant, when knowledge workers perceive leaders as actively engaging and committing to supporting knowledge and learning activities (DeTienne et al., 2004 in Jane, 2015:4).

Additionally, leaders are also responsible for accomplishment of tasks for organizational learning. Gilaninia, Rankouh and Gildeh,(2013) express that leaders have significant responsibilities and duties through relationships and measurements such as making organizational structures, shaping culture in organizational learning. Marsick and Watkins (2003) in Nordin and Kasbon (2013), explored that behavior of leaders have significant effect on process of organizational learning in all organization.

2.8. KNOWLEDGE MANAGEMENT IN INFORMATION AND COMMUNICATION TECHNOLOGY AND SOFTWARE FIRMS

Technology can be considered as instrument in the process of knowledge management for the fulfillment of the organizational objectives. In this context, technology itself facilitates the implementation of knowledge management practices. As the information technology is mainly used in companies, organizational outcomes can be assumed as knowledge intensive ones in general terms.

Information technology is used intensively in the base of knowledge flow (Afrooz and Shiri, 2015). According to Rus and Lindvall software firms based intensively on knowledge (Menolli, Reinehr and Malucelli, 2013). Swart and Kinnie (2003) state engineering, research and development units and high-tech companies as types of knowledge intensive firms. In this sense, knowledge can be regarded as a crucial resource for technology oriented firms.

On the basis of literature, knowledge management is mainly related to ICT/Software firms. Dalkir (2011) highlighted that organizations which are interested principally in information technology have various knowledge intensive positions to fulfill; similar sectors include: software industry, computer hardware companies, system integrators and technology development companies. In software engineering, for being an area of knowledge-based processes, it is of utmost importance to learn from the past, by storing and organizing the existing knowledge

in the organizations in order to reuse it, thus preventing previous errors (Menolli, Reinehr and Malucelli, 2013:1154).

Additionally, high technology companies are also involved in knowledge management activities in terms of creating and sharing knowledge. According to Amiryany, Huysman, de Man and Cloodt (2008), knowledge intensive and high-tech companies, engage in a knowledge acquisition. They also state that degree of knowledge links between acquiring knowledge and acquired company impact on knowledge sharing. Furthermore, ICT firms engage in knowledge sharing and knowledge transfer. ICT firms are enable to create knowledge environment such as knowledge sharing and transfer (Hendriks, 1999) in Feher (2004).

Characteristics of knowledge intensive or high tech companies can be assumed that are comprised from high-skilled and knowledgeable employees, both having more technology based capabilities, creating innovation, and so on. Swart and Kinnie (2003) indicate that knowledge intensive firms have these features; high skilled human capital, knowledge based processes as a whole, and distribution of knowledge should be included innovation and building in provision. Additionally, the employees can be considered as a crucial part of the firms. They are more knowledgeable and talented. They work in multiple tasks and accomplish task goals by using computer-based technology.

Dalkir (2011) states that knowledge management is based on multidisciplinary fields such as knowledge based systems, document and information management, electronic performance support systems and database technologies and so on. These multidisciplinary fields are significantly related to information technology and information systems in knowledge management. With reference to Dalkir (2011:8), interdisciplinary nature of knowledge management is presented below:

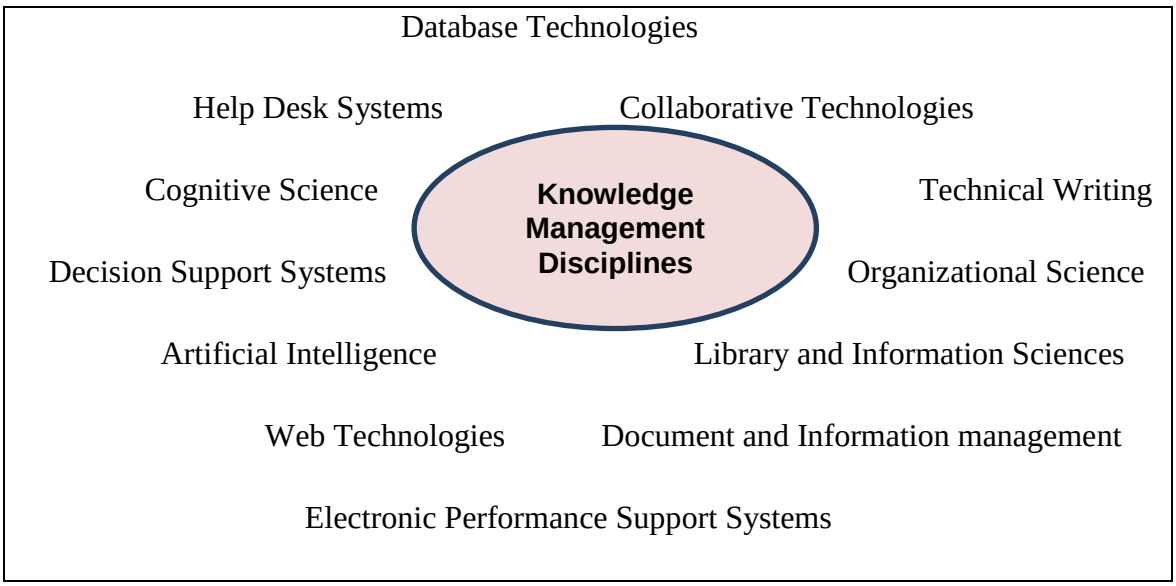

Figure 3. Interdisciplinary Nature of Knowledge Management

Management activities also significantly converge knowledge management practices in ICT/Software firms. Furthermore, behavior of leaders has a significant role for the accomplishment of tasks and duties in ICT/Software firms. Kalinova (2008) states that project manager must increase value of company, having highly motivated, engaged in complex thinking including conceptual and analytical skills and having ability to think transforming company to new challenges.

Additionally, ICT/Software managers use intensively computer related activities as a result of their technology oriented backgrounds. According to Computer Sciences Corporation (CSC, 1996) in Gottschalk (2000), the importance of IS leadership roles in terms of setting the IS future agenda in six principles ‘’chief architect, change leader, product developer, technology provocateur, coach and chief operating strategist’’ (p.33).

2.8.1. Summary of Knowledge Management and Organizational Learning Practices in Turkey

On the basis of literature concerning Turkish ICT/IS firms, there are several studies about different topics. For example, Hatunoğlu (2015) underlines that ICT

firms in Turkey have mainly adaptation skills and innovative capabilities. He examined the relation between organizational innovation and knowledge management practices in the top 500 ICT firms in Turkey. He underlines the importance of knowledge management practices such as knowledge creation, acquisition, documentation, transfer and application on organizational innovation in ICT firms because of their characteristics and technology based orientation. He deduced that knowledge management as mention above has substantial effect on organizational innovation.

Additionally, Basol (2011) compared big and small software companies in her study and deduced that employees of small software companies can effectively communicate and get motivated in projects. She emphasized the significance of organizational structural determinants and relationship between organizational effectiveness in software industry and examined the organizational structures and effectiveness according to firm's age, size, level of hierarchy and so on. Her study findings underline those structural features such as organizational size, formalization and specialization effect on organizational effectiveness.

Furthermore, there are also studies about relationship between knowledge management, organizational learning and characteristics of firms in Turkey. TUENA in Özçivelek and Zontul (2004) highlighted the profile of Turkish Software industry being as small and with a tiny number of employees who are also qualified. Özçivelek and Zontul (2004) underline Turkish Software companies in techno-parks enhance their R&D activities and innovation capabilities. Their findings imply the importance of the role of ICT sector in Turkish economy and have great capacity to compete foreign markets.

Altıntaş (1999) examined organizational learning in his thesis entitled as driving needs for learning organizations and transforming an existing organization into a learning organization. He examined the number of 40 IT firms in Turkey due to the fact that these firms can be implemented some strategies in the base of being learning firms which is related to such dimensions; eliciting, capturing, documenting and communicating.

Finally, Yıldırmaz (2008) examined in his doctorate thesis in the base of knowledge management capabilities and its relation with performance as well as new product development in IT firms of Turkey. He underlines the importance of these three concepts in IT sector. His study results support the importance of the relationship between knowledge management enablers and knowledge creation and their impact on firm performance.

2.9. TEMPLETON'S ORGANIZATIONAL LEARNING MODEL

2.9.1. The Model

Main tool used to measure organizational learning under knowledge management perspectives in this study is Templeton, Lewis and Snyder's (2002) organizational learning instrument, due to the fact that this instrument contributes on organizational learning and knowledge management fields in an effective way. The main reason behind is that, this instrument was created to fulfill a gap (Templeton, Lewis and Snyder, 2002 in Bush 2006) by providing a measure to converge separate researches in both fields.

Templeton (2002) created organizational learning model in eight dimensions under Huber's (1991) knowledge management perspectives. Based on Huber's (1991) framework, Templeton, Lewis and Snyder (2000) re-established OL as represented by eight significant constructs (Cho, Ellinger, Ellinger and Klein, 2009). These are awareness, communication, performance assessment, intellectual cultivation, environmental adaptability, social learning, intellectual capital management, organizational grafting and relationship between knowledge acquisition, information distribution, information interpretation and organizational memory concepts. Templeton et al. (2002) in Babaeinesami and Abdi (2011) indicated that questionnaire in accordance with organizational learning description contains four dimensions; knowledge acquisition, information distribution,

information interpretation and organizational memory. Dimensions are indicated in Table 2.

Table 2. Huber's (1991) Organizational Learning Construct In Eight Dimensions

Knowledge Acquisition	Awareness, Social learning,Performance Assessment, Intellectual Cultivation, Organizational Grafting, Intellectual Capital Management
Information Distribution	Awareness, Intellectual Cultivation, Social learning, Environmental Adaptability
Information Interpretation	Communication, Performance Assessment, Environmental Adaptability, Social learning
Organizational Memory	Communication, Environmental Adaptability, Intellectual Capital Management, Intellectual Cultivation, Performance Assessment

On the basis of literature, there are various opinions on the link between organizational learning and knowledge management. Slater and Narver (1995) in Fani, Fard and Yakhkeshi (2015) indicate that organizational learning is a process that is comprised from information distribution, information dissemination and shared information. Valaei and Aziz (2012) highlighted that management should acknowledge the "learning link" between knowledge management process for composing organizational preferences and knowledge management benefits. The improvements in research methods and measures of OL/knowledge management would have the greatest impact (Easterby-Smith and Lyles (2003, p. 645) in Busch, (2006). With reference to Babaeinesami and Abdi, (2012:3183), Templeton's organizational learning factors from a knowledge management perspective are presented in Table 3.

Table 3. Templeton's Learning Factors

Learning factor	Learning indices
Awareness	Collecting information from within Directing information Analysis of information Information management system Using information
Communication	Using communicational tools Using electronic means Encouraging employees to communicate clearly
Performance assessment	Rules of managing information Storing information Guiding operations by means of stored information Encouraging the use of frameworks and models
Intellectual cultivation	Employees training Collecting information from outside Developing experts Management learning by direct observation
Environment adaptability	Fast reaction to technological change Using electronic memory Use of IS Using archived information
Social Learning	Employees resistance toward new ways Keeping information and plans from other employees Learning about developments
Intellectual capital management	Using employees with multifarious skills Acquiring subunits based on short term financial gain Hiring highly specialized or knowledgeable personnel
Organizational grafting	Accepting strategies of competitors Acquiring capabilities from outside

Templeton, Lewis and Snyder (2002) explain organizational learning dimensions in Huber's knowledge management perspectives such as awareness, communication, performance assessment, intellectual cultivation, environmental adaptability, social learning, intellectual capital management and organizational grafting in knowledge acquisition, information distribution, information interpretation and organizational memory. These concepts are covered in detail.

2.9.2. Awareness

Awareness is the degree of which organizational members are aware of the organizational information and it's suitability to remaining problem areas (Templeton, Lewis and Snyder, 2002). Awareness can be considered that includes the comprehension of existing information and its sustainability in using, analyzing and directing as well as collecting.

Awareness is useful for description of problems for implementing knowledge management activities. Chandran and Raman (2009) underline that understanding of problems in knowledge management contribute to the organization to gain more awareness and being active in the implementation. In this context, the understanding of problems in knowledge management activities can be considered as a crucial for acquiring and transferring knowledge in an effective way. Valaei and Aziz (2012) highlighted that managers must be aware of knowledge management jargon and its basic factors. In this sense, members in the organization may use same words but meanings can be different in knowledge management.

On the basis of literature, there are certain relations between awareness and knowledge management. Chandran and Raman (2009) in (Dyer 2000) express organizations must be aware of their type of organizational culture and make learned outcomes on the type of knowledge management actions to use. Ferscha (2001) underlines that virtuous information on awareness based on members are demanded, providing systematic consideration of concepts relationship with applications and purposes. He indicates the importance of members as storing, retrieving, presenting

multimedia content, making decisions, sharing applications, browsing data and acquiring exchange knowledge.

2.9.3. Communication

Communication is the degree of existing communication among members (Templeton, Lewis and Snyder, 2002). Marsick (1999) states that communication is a key part of organizational learning. She implies that communication often includes such significant problems; unproductive relations, barriers including discriminations or inability to problem solving skills. In this sense, organizational learning may enable to improve or create common understanding among members. In communication process, there are interactions between members through networks, channels, verbal or nonverbal communications. Communication channels can be considered as computer based technologies including e-mails, forums, internet, and video conference. Thus, these interactions can be assumed that enable to information sharing.

Various researchers indicate the relationship between communication and knowledge management in the literature. For instance; Tingoy and Kurt (2009) state that communication is significant for knowledge management process, type of communication tools can be used for knowledge creation and sharing. Smith and Lumba (2008) emphasize that direct or indirect communication permits to share knowledge among individual, internal and external constructions. In this context, it can be assumed that information is distributed to each other by means of networks and interactions. This shared information can be stored in organizational memory.

Communication can be beneficial for distribution of information in an organization. For instance, members in the company may use some applications for accomplishment of the tasks such as e-mails, forums, networks, internet and so on. Groff & Jones (2003) in Smith and Lumba (2008) underline technology as a key driver to provide knowledge management activities, especially in large spread network. Therefore, it can be concluded that technology facilitates the

communication means for accomplishment of the organizational tasks in terms of transferring information. Serrat (2009) states that communication systems facilitate information transfer and knowledge beyond formal structural boundaries.

Furthermore, there are certain approaches about communication in the context of organizational learning. First, organizational learning can be considered as a social construction that express the improvement of a common understanding, opening from the social base and links between individuals (Brown & Duguid, 1991) in Alikhani, Fazlollahtabar and Mahdavi (2013). This social construction enable the information interpretation (Sims and Gioia 1986) in Huber (1991). In this context, information interpretation can be occurred by means of communication among members. Second, social capital can be considered as a significant factor for communication directly with organizational outcomes. Ronasi and Aeeni (2014) imply social capital as precious assets in relation with communication and network members which is composed of norms, trusts in accordance with organizational goals. Meanwhile, it can be considered that social capital in the context of communication facilitates knowledge management activities. Gold, Malhotra and Segars (2001) imply importance of technology as a significant part of structural dimension which is needed to organize social capital for creating new knowledge. Rojas, Shah and Friedland (2011) explain social capital with a communicative point of view and changing social reactions to transfer information and share meaning progress via social ties.

2.9.4. Performance Assessment

Performance assessment is related with the undertaking of performance activities in accordance with organizational purposes (Templeton, Lewis and Snyder, 2002). An influential performance measurement includes financial and non-financial indicators and a balance link with various views (Turner and Minonne, 2010). In this context, these indicators can be stored in organizational memory for understanding of decision-making. Makinen and Huotari (2004) express that organizational memory

promotes decision-making because it saves an organization's background and base of decisions.

There are various links between performance assessment and knowledge management. Vidovic (2010) states that there is a continuous relationship between knowledge management's contributions to organizational performance as financial indicators. Minonne and Turner (2009) underline the importance of KM and its performance assessment has crucial economic asset for many organizations.

Furthermore, it can be assumed that knowledge management cannot be only considered as tangible assets but also intangible asset that improves organization's performance. Enz (2008) in Saini (2013) states intangible assets such as knowledge management, organizational learning and market orientation provide to organization to enhance their abilities that increase competitive advantage managing market performance. Naude (2012) underlines importance of intangible asset of knowledge management as knowledge, relationships, people, reputation and intangible capital networks, brands, talents.

2.9.5. Intellectual Cultivation

Intellectual cultivation is the improvement of skills, expertise and experience between members (Templeton, Lewis and Snyder, 2002). Intellectual cultivation can be considered that includes development of skills, experts, training, management, learning and experiences in accordance with organizational purposes. The firms may acquire their knowledge through development of these competencies. When firms need to use their resources in line with desired goals, they can be acquired their competencies from outside or developing their abilities by training. In this context, these competencies may enable the interactions between members. As a result, the members might share information in an interactive way. This sharing information is stored in organizational memory for reutilization in the organization. Makinen and Huotari (2004) concluded that organizational memory is a process that consists of individual, distributed and retrieved information that has effect on organizational

learning, competitive advantage and decision making promoted by information technology.

2.9.6. Environmental Adaptability

Environmental adaptability is technology based applications concerned with adaptability of environment to change (Templeton, Lewis and Snyder, 2002). Environmental adaptability can be considered that includes mainly technological changes, internal and external skills, competitors, economic, politic systems and adaptation in the changing environment. Ployhart and Bliese (2006) argue individual's adaptability involves skills, motivation and willingness to change as regard to changing environment in Shahzad, Zia, Aslam, Syed and Bajwa, (2013). This adaptability may enable the members to stay in external environment as sharing and creating new knowledge. Organizational memory enables to stored this shared and interpred information in direct with organizational outcomes.

Environmental adaptability can be regarded as a key factor for implementing effective knowledge management process among members. An influential knowledge management process mainly relies on organizational members' adaptation and ability to join in such activities including knowledge creation, knowledge sharing, knowledge acquisition, and knowledge codification (Shahzad, Zia, Aslam, Syed and Bajwa, 2013). In this context, it can be assumed that member of skills, abilities, and behaviors are crucial in terms of adaptation of technological changes in quickly, using electronic memory, IT or other systems in an organization.

Furthermore, environmental adaptability can also be considered in two different directions being as internal and external. Alikhani, Fazlollahtabar and Mahdavi (2013) imply that external environments can include competitors, social, economic and political systems as industrial agents; the internal environment includes process, activities, systems and members inside of the company. In this context, environmental adaptability can be defined as using internal and external skills in direct with technological changes. In this sense, it can be assumed that

member of skills and behaviors concerning adaptation of technological changes are significant for implementing knowledge management. These adaptive behaviors might enable to share information through interactions and these shared information interprets the new information as a result of learning.

2.9.7. Social Learning

Social learning is the degree of which members have ability to learn via social channels about organizational concerns (Templeton, Lewis and Snyder, 2002).

Ali, Warne and Pascoe (2010) indicate social learning are comprised and facilitated from dimensions such as; common identity, problem solving, team building, access to information, improvement of expertise, communication, induction as well as enculturation. In this context, members may learn new things through networks, interactions, and communications. These social relationships and interactions concerning social learning may enable the information distribution, interpretation and acquisition. In this context, this shared or distributed information may bring on new information through interactions as a result of obtaining information interpretation. Huber (1991) indicates that shared information concerning communication, information interpretation and organizational effectiveness in empirical research.

Additionally, personal and social networks also enable the information distribution and information interpretation by social learning. According to Ellison and Fudenberg's (1993) view in Lamberson (2010), show that technologies and behaviors of expansion by means of social networks exhibit that network structures facilitate the distribution of shared understanding. In this sense, it can be regarded that network structures and interactions are mainly substantial and facilitate the information distribution and information interpretation in an organization.

2.9.8. Intellectual Capital Management

Intellectual capital management is the degree of which organization manages knowledge, skills and intellectual capital applications for long term strategic gain (Templeton, Lewis and Snyder, 2002).

Intellectual capital includes human and structural capital in one place. Sveiby in Kocoglu, Imamoglu and Ince (2009) states intellectual capital is comprised from employee competence, internal and external structure. Additional dimensions of intellectual capital are stated by researchers as the link with customers and partners, innovation efforts, the base of the firm and the knowledge and ability among members in the organization (Edvinsson and Malone 1999) in Hormiga, Canino and Medina (2010). According to Roos (1997) and Marr (2003) in Marr, Gupta, Pike and Roos, (2003) intellectual capital management includes performance in accordance with measuring performance, developing knowledge management process with internal and external performance in terms of influential transformations. In this context, intellectual capital resources may include customers, suppliers or other human capital. Companies constantly invested in these resources. These resources can be stored in organizational memory.

There are several studies that focus on the relationship between intellectual capital management and knowledge management. To begin with, Sveiby (1997), Saint Onge (1996), and Bontis (1998) in Kok (2007) state that intellectual capital is comprised from human capital, structural capital and relational (customer) capital. Additionally, Marr, Gupta, Pike and Roos (2003) indicated that usage of knowledge management can ensure knowledge acquisition and growth of intellectual capital. Hormiga, Canino and Medina (2010) underline that intellectual capital includes knowledge creation, explicit knowledge and significance of skills.

2.9.9. Organizational Grafting

Organizational grafting is the degree of which organization take advantage of knowledge, practices and internal capacities (Templeton, Lewis and Snyder, 2002). Organizational grafting may enable to acquire information from outside sources. This can be regarded as obtaining or using competitor's strategies and acquiring capabilities from outside. In this sense, the firms may acquire knowledge in external environment.

Research indicates relations between organizational grafting and knowledge management. Empirical studies of knowledge acquisition through grafting are scarce, where but Lyle's (1988) in Huber, (1991: 97) examination of knowledge acquisition through joint ventures can be shown as an example. Grafting is a model that is related to learning from others pertaining knowledge acquisition through entry to new members (Amiryany, Huysman, de Man and Cloodt, 2008). Grafting contains hiring people or acquiring units or departments (Huber, 1991) in Fletcher and Harris (2011). In this sense, organizational grafting can be formed by acquiring outside knowledge in order to build-up competencies. Organizational grafting is mainly related to knowledge acquisition from the units or departments as stated by (Cho, Ellinger A., Ellinger E.A. and Klein, 2009).

Additionally, organizations may also internalize technology grafting activities for improvement of product line. Puranam, Singh and Zollo (2003) highlighted that increasing significance of technology-grafting acquisitions frequently lead to expanding tine to market pressures and necessary to improve wide product line.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Research design and methodology is key part of the study to accomplish to research objectives. In this section, research aim, research questions, sample, data collection technique and research findings are discussed.

3.1. RESEARCH QUESTIONS AND RESEARCH AIM

To reach the organizational outcomes, acquired information should be processed by employees and be transformed into practice. In this context what is the relationship between organizational learning and knowledge management in general terms?

Considering that ICT/software firms are knowledge intensive firms, how should pooled knowledge be managed in practical terms in a learning environment by following the steps deduced from OL dimensions? There are additional research questions in the study.

1- What are the work experience differences of OL process in ICT/Software firms with the KM perspectives?
2- What are the formation differences of OL process in ICT/Software firms with the KM perspectives?
3- What are firm's age differences of OL process in ICT/Software firms with the KM perspectives?
4- What are firm's area of the activity differences of OL process in ICT/Software firms with the KM perspectives?
5- What are firm's place differences of OL process in ICT/Software firms with the KM perspectives?

Therefore the goal of this study is to discover the relationship between organizational learning and dimensions including the firm's age, place, area of activity and manager's education level as well as work experience in ICT/Software firms in a context of KM.

3.2. SAMPLE

As of 2016, there are nearly 41 techno-parks in Turkey including 5 in Ankara according to records of the Association of Technology Development Area (ATDA, 2015). These techno parks work with universities, industrialists, entrepreneurs and various researchers in accordance with mutual purposes such as creating and sharing knowledge platforms for technology parks as well as working in R&D ecosystem.

According to records of the Association of Technology Development Area, the number of software firms is around 39% and the number of computer and communication technology firms is around 19% in the technological fields in Turkey (ATDA, 2015). Accordingly, it is deduced that especially software industry constitutes an important part of Turkish Techno parks.

Regarding the fact that ICT and software firms are included in information technology industry, related firms located in two technoparks are selected as the sample. Data for this study is collected from 110 managers/owners among nearly 440 of total ICT/Software firms in two techno-parks. These two technoparks are ''Hacettepe Technopark'' and ''Ankara Technopark''. However it should also kept in mind that total of firms are obtained from different websites and maynot represent the exact figure. Based on the assumption of the high firm density in related technoparks, these two technoparks are selected for the study.

By using random sampling method, focused sample mainly consists of ICT/Software firms due to the fact that firms in question are assumed to be technology-based ones. Since ICT/Software firms are technology-based, knowledge management is used intensely in these firms. Additionally, organizational learning enables to effective use of knowledge management activities. In this sense, there is need to organizational learning for managing knowledge management activities in ICT/Software firms.

Majority of the firms consist of 3-5 employees, where, around 12 firms include more than 10 employees. According to the number of employees it can be intuited that most of the sample firms are small firms.

3.3. DATA COLLECTION TECHNIQUE

This study was used to quantitative research data. Each potential respondent manager/executive was contacted face-to-face. In this interaction, question types and their contents were identified to respondents for better understanding. Each respondent answered 33 questions in the survey. These are comprised from 28 questions concerning organizational learning including knowledge management practices (Templeton, 2002) and 5 independent demographic questions. All questions except for demographic ones were measured by five-point Likert-Scale which was originated from ‘’strongly disagree’’ to ‘’strongly agree’’.

3.4. SURVEY INSTRUMENT

3.4.1. Organizational Learning Instrument

Main objective of the study is to measured organizational learning measurement from KM perspectives to relationship between firm’s age, the area of activity, place and owner’s education level as well as work experience in ICT/Software firms. The following instrument which was created by Templeton, Lewis and Snyder’s (2002) organizational learning measures from KM perspectives in eight dimensions which are awareness, communication, performance assessment, intellectual cultivation, environmental adaptability, social learning, intellectual capital management and organizational grafting in Huber’s (1991) knowledge management perspectives; (1) knowledge acquisition (2) knowledge distribution (3) information interpretation and (4) organizational memory. The instrument was measured by Likert-type ranging from 1 (strongly disagree) to 5 (strongly agree) as

mentinoned before. The instrument questionnaires were translated from English to Turkish and applied directly in the research.

3.4.2. Demographic Questions

The demographic questions are education status of participant, work experience, age of institution, place of institution and area of activity. The demographics questions are used for frequency tables.

3.5. DATA ANALYSIS

Data is collected from the managers/owners as respondents from each firm. Then statistical program for social sciences (SPSS 22) is used for calculation. First, demographic items are evaluated. Second, reliability analysis and Non-parametric tests (Man-Whitney U and Kruskal Walls H) are calculated and presented by the tables.

3.6. RESEARCH FINDINGS

This section presents the research findings. First, demographic features of sample is examined. Second, reliability analysis and normal distribution tests are conducted. Then, Non-parametric tests and correlation analysis are conducted to measure organizational learning from knowledge management perspectives.

3.6.1. Demographics

In this study, there are independent variables such as (1) owner's education level, (2) work experience, (3) area of activity, (4) institution of place and (5) age of institution are investigated by following frequency tables.

Table 4. Distribution of Education Level

	Frequency	Percent	Cumulative Percent
High School	3	2,7	2,7
Bachelor Degree	64	58,2	60,9
Master Sciences	39	35,5	96,4
Philosophy of Doctorate	4	3,6	100,0
Total	110	100,0	

From the Table 4, it can be concluded that 58,2% of the respondents with a count of 64 are graduated from a university, 35,5% of respondents with count of 39 are graduated from a master's program, 3,6% of the respondents with a countof 4 are graduated from a PhD program and 2,7% of respondents with a count of 3 are graduated from a high school. It can be concluded that the largest number of respondents are graduated from a university.

Table 5. Distribution of Work Experience

	Frequency	Percent	Cumulative Percent
Between 0 - 3 Years	25	22,7	22,7
Between 4 - 9 Years	23	20,9	43,6
Up to 10 Years	62	56,4	100,0
Total	110	100,0	

From the Table 5, it can be inferred that 56,4% of respondents with a count of 62 are between the work experience of 10 years and over, 22,7% of respondents with a count of 25 are between the work experience of 0-3 years and 20,9% of respondents with a count of 23 are between the work experience of 4-9 years in the study.

Table 6. Distribution of Place of Institution

	Frequency	Percent	Cumulative Percent
Ankara Technopark	28	25,5	25,5
Hacettepe Technopark	82	74,5	100,0
Total	110	100,0	

From the Table 6, it can be inferred that 74,5% of the respondents with a count of 82 are in Hacettepe technopark, 25,5% of the respondents with a count of 28 are in Ankara technopark in the study.

Table 7. Distribution of Area of Activity

	Frequency	Percent	Cumulative Percent
Software	66	60,0	60,0
ICT	44	40,0	100,0
Total	110	100,0	

From the Table 7, it can be inferred that 60,0% of respondents with count of 66 are in Software, 40,0% of respondents with count of 44 are in ICT in the study.

Table 8. Distribution of Age of Institution

	Frequency	Percent	Cumulative Percent
Below to 10 Years	67	60,9	60,9
Between 11 - 20 Years	36	32,7	93,6
Up to 21 Years	7	6,4	100,0
Total	110	100,0	

From the Table 8, it can be concluded that 60,9% of respondents with a count of 67 are between age of institution of 10 and below, 32,7% of respondents with a count of 36 are the between age of institution of 11-20 years, 6,4% of respondents of with a count of 7 are between the age of institution of 21 and over in the study.

3.6.2. Reliability Statistics

Reliability analysis measures the consistency of responses to a survey prepared according to a pre-determined scale. Here, the meaning of consistency is uniquely the consistency of the answers to the questions with ordinal scale responses. The basic analysis used for reliability aims to find to Cronbach Alpha value. The survey's reliability results are below;

Table 9. Reliability Statistics

Cronbach's Alpha	N of Items
0,773-0,806	28

Cronbach alpha value for substance validity was found to be between 0,773 and 0,806 for the analysis of the validity of each individual item (question) in this study. Alpha values of 0.7 are normally satisfactory demonstrations of internal stability of an instrument (Schneider 2003) in Chandran and Raman (2009). This result shows that this survey has a high reliability. Accordingly, survey questionnaire is directly implemented on the respondents.

3.6.3. Hypotheses

H1: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in Ankara.

H1a: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in awareness in Ankara.

H1b: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in communication in Ankara.

H1c: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in performance assessment in Ankara.

H1d: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in environmental adaptability in Ankara.

H1e: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in intellectual cultivation in Ankara.

H1f: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in social learning in Ankara.

H1g: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in intellectual capital management in Ankara.

H1h: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in organizational grafting in Ankara

H2: There is a difference between organizational learning and owner's work experience.

H2a: There is a difference between organizational learning in awareness and owner's work experience.

H2b: There is a difference between organizational learning in communication and owner's work experience.

H2c: There is a difference between organizational learning in performance assessment and owner's work experience.

H2d: There is a difference between organizational learning in environmental adaptability and owner's work experience.

H2e: There is a difference between organizational learning in intellectual cultivation and owner's work experience.

H2f: There is a difference between organizational learning in social learning and owner's work experience.

H2g: There is a difference between organizational learning in intellectual capital management and owner's work experience.

H2h: There is a difference between organizational learning in organizational grafting and owner's work experience.

H3: There is a difference between organizational learning and firm's area of activity.

H3a: There is a difference between organizational learning in awareness and firm's area of activity.

H3b: There is a difference between organizational learning in communication and firm's area of activity.

H3c: There is a difference between organizational learning in performance assessment and firm's area of activity.

H3d: There is a difference between organizational learning in environmental adaptability and firm's area of activity.

H3e: There is a difference between organizational learning in intellectual cultivation and firm's area of activity.

H3f: There is a difference between organizational learning in social learning and firm's area of activity.

H3g: There is a difference between organizational learning in intellectual capital management and firm's area of activity.

H3h: There is a difference between organizational learning in organizational grafting and firm's area of activity.

H4: There is a difference between organizational learning and owner's education level.

H4a: There is a difference between organizational learning in awareness and owner's education level.

H4b: There is a difference between organizational learning in communication and owner's education level.

H4c: There is a difference between organizational learning in performance assessment and owner's education level.

H4d: There is a difference between organizational learning in environmental adaptability and owner's education level.

H4e: There is a difference between organizational learning in intellectual cultivation and owner's education level.

H4f: There is a difference between organizational learning in social learning and owner's education level.

H4g: There is a difference between organizational learning in intellectual capital management and owner's education level.

H4h: There is a difference between organizational learning in organizational grafting and owner's education level.

H5: There is a difference between organizational learning and firm's age.

H5a: There is a difference between organizational learning in awareness and firm's age.

H5b: There is a difference between organizational learning in communication and firm's age.

H5c: There is a difference between organizational learning in performance assessment and firm's age.

H5d: There is a difference between organizational learning in environmental adaptability and firm's age.

H5e: There is a difference between organizational learning in intellectual cultivation and firm's age.

H5f: There is a difference between organizational learning in social learning and firm's age.

H5g: There is a difference between organizational learning in intellectual capital management and firm's age.

H5h: There is a difference between organizational learning in organizational grafting and firm's age.

3.6.4. Normal Distribution Test (One Sample Kolmogorov- Smirnov Test)

The normal distribution test is given in the total scores of the organizational learning dimensions.

Table 10. Normal Distribution Test

	Awareness	Communication	Performance_ Assesment	Intellectual_ Cultivation	Environmental_ Adaptability	Social_ Learning	Intellectual_ Capital_ Management	Organizational_ Grafting
N	110	110	110	110	110	110	110	110
Test Statistic	,091	,216	,123	,110	,111	,157	,177	,185
Asymp. Sig. (2-tailed)	,026[c]	,000[c]	,000[c]	,002[c]	,002[c]	,000[c]	,000[c]	,000[c]

c. Lilliefors Significance Correction

H0: The total score of the dimensions corresponds to the normal distribution (normal distributed).

H1: The total score of the dimensions does not fit the normal distribution (not normally distributed).

Asymp. Sig. (2-tailed) < table value Alfa (a= 0, 05).

H0 is rejected. H1 is accepted. The variables are not normally distributed. Therefore non-parametric hypothesis tests should be used in this study.

3.6.5. Non-Parametric Test

Due to the fact that variables are not normally distributed, non-parametric tests (Mann-Whitney U and Kruskal Wallis) are used in this part. Mann-Whitney-U tests are used to compare two variables and Kruskal Wallis tests are used to compare with two or more variables in the study.

3.6.5.1. Place of Institution

Table 11. Non-parametric Test Results for OL and Place of Institution

Ranks					
	Place of Institution	N	Mean Rank	Mean	Sum of Ranks
Organizational Learning (Total dimensions)	Ankara Technopark	28	45,61	97,07	1277,00
	Hacettepe Technopark	82	58,88	101,68	4828,00
	Total	110		100,51	

H0: There is no statistically difference between the organization total scores of learning (organizational learning) of firms working in Ankara Technopark and the organization total scores of learning (organizational learning) of firms working in Hacettepe Technopark.

H1: There is a statistically difference between the organization total scores of learning (organizational learning) of firms working in Ankara Technopark and the organization total scores of learning (organizational learning) of firms working in Hacettepe Techno park.

Table 12. Mann-Whitney U Test for Place of Institution

Test Statistics[a]	
	Organizational Learning (Total dimensions)
Mann-Whitney U	871,000
Z	-1,902
Asymp. Sig. (2-tailed)	,057

Asymp. Sig. (2-tailed) (0,057) > table value Alfa (a= 0, 05). H1 is rejected. H0 is accepted. Therefore it can be concluded that there is no statistically difference between the organization total scores of learning of firms working in Ankara Technopark and the organization total scores of learning of firms working in Hacettepe Technopark. The total scores of firms operating in the Ankara technopark at the total dimensions (organizational learning) are statistically equal to the total scores of the companies operating in Hacettepe Technopark.

3.6.5.2. Area of Activity

Table 13. Non-parametric Test Results for OL and Area of Activity

Ranks					
	Area of activity	N	Mean Rank	Mean	Sum of Ranks
Organizational Learning (Total dimensions)	Software	66	51,80	98,91	3418,50
	ICT	44	61,06	102,91	2686,50
	Total	110		100,51	

H0: There is no statistical difference between the organization's total score (organizational learning) of Software and the organization's total score (organizational learning) of ICT firms.

H1: There is a statistical difference between the organization's total score (organizational learning) of Software and the organization's total score (organizational learning) of ICT firms.

Table 14. Mann-Whitney U Test for Area of Activity

	Organizational Learning (Total dimensions)
Mann-Whitney U	1207,500
Z	-1,493
Asymp. Sig. (2-tailed)	,135

Asymp. Sig. (2-tailed) (0,135) > table value Alfa (a= 0, 05). H1 is rejected. H0 is accepted. There is no statistical difference between the organization's total score (organizational learning) of software firms and the organization's total scores of ICT firms (organizational learning). Therefore, the total score of software-operated firms in total dimensions can be statistically equal to the total scores of ICT firms (organizational learning).

3.6.5.3. Education Level

Table 15. Non parametric test for OL and Education Level

	Education Level	N	Mean Rank	Mean
Organizational Learning (Total dimensions)	High School	3	67,50	103,33
	Bachelor Degree	64	57,59	101,58
	Master Sciences	39	49,54	98,13
	Philosophy of Doctorate	4	71,13	104,50
	Total	110		100,51

H0: There is no statistically significant difference between organization scores (organizational learning) according to the educational level of the managers of the firms.

H1: There is a statistically significant difference between organization scores (organizational learning) according to the educational level of the managers of the firms.

Table 16. Kruskal Wallis Test for Education level

	Organizational Learning (Total dimensions)
Chi-Square	3,027
Df	3
Asymp. Sig.	,387

Asymp. Sig. (2-tailed) (0,387) > table value Alfa (a= 0, 05). H1 is rejected. H0 is accepted. There is no statistical difference between organization scores according to the educational level of firm managers. In the total dimension, the total scores (organizational learning) of the managers of the firms according to the education level can be statistically equal.

3.6.5.4. Work Experience

Table 17. Non-parametric test results for OL and Work Experience (1)

	Work Experience	N	Mean Rank	Mean
Organizational Learning (Total dimensions)	Between 0 - 3 Years	25	67,52	104,40
	Between 4 - 9 Years	23	65,24	102,13
	Up to 10 Years	62	47,04	98,34
	Total	110		100,51

H0: There is no statistically significant difference between the organization's total score (organizational learning) according to the work experience of the firms.

H1: There is a statistically significant difference between the organization's total score (organizational learning) according to the work experience of the firms.

Table 18. Kruskal Wallis Test for Work Experience

	Organizational Learning (Total dimensions)
Chi-Square	10,072
Df	3
Asymp. Sig.	**,007**

Asymp. Sig. (2-tailed) (0,007) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between organizational learning and organization's work experience. Organization scores are not statistically equal to firms' work experience scores. As work experience increases, the level of participation in organization learning decreases.

Table 19. Non-Parametric Test Results for OL and Work experience (2)

Ranks				
	Work experience	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Between 0 - 3 Years	25	25,22	630,50
	Between 4 - 9 Years	23	23,72	545,50
	Total	48		

H0: There is no statistically difference between organization total learning scores (organizational learning) of firms with work experience between 0-3 years and organization total learning scores of firms with work experience between 4 -9 years.

H1: There is a statistically difference between organization total learning scores (organizational learning) of firms with work experience between 0-3 years and organization total learning scores of firms with work experience between 4 - 9 years.

Table 20. Mann-Whitney U Test for Work Experience

	Organizational Learning (Total dimensions)
Mann-Whitney U	269,500
Z	-,372
Asymp. Sig. (2-tailed)	,710
a. Grouping Variable: Work experience	

Asymp. Sig. (2-tailed) (0,710) > table value Alfa (a= 0, 05). H1 is rejected. H0 is accepted. There is no statistically significant difference between the organization total learning scores (organizational learning) of firms with work experience between 0-3 years and the organization total learning scores (organizational learning) of firms with work experience between 4 - 9 years.

Table 21. Non-Parametric Test for OL and Work experience (3)

	Work experience	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Between 0 - 3 Years	25	55,30	1382,50
	Up to 10 Years	62	39,44	2445,50
	Total	87		

H0: There is no statistical difference between organization total learning scores (organizational learning) of firms with work experience between 0 -3 years and organization total learning (organizational learning) of firms with work experience between 10 years and more.

H1: There is a statistical difference between organization total learning scores (organizational learning) of firms with work experience between 0 - 3 years and organization total learning (organizational learning) of firms with work experience between 10 years and more.

Table 22. Mann-Whitney U Test for Work experience

	Organizational Learning (Total dimensions)
Mann-Whitney U	492,500
Z	-2,652
Asymp. Sig. (2-tailed)	**,008**
a. Grouping Variable: work experience	

Asymp. Sig. (2-tailed) (0,008) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between organization total learning scores (organizational learning) of firms with work experience between 0 - 3 years and organization total learning (organizational learning) of firms with work experience between 10 years and more. As institutional work experience increases, participation in organizational learning (total dimensions) decreases.

Table 23. Non-Parametric Test Results for OL and Work experience (4)

	Work experience	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Between 4 - 9 Years	23	53,52	1231,00
	Up to 10 Years	62	39,10	2424,00
	Total	43		

H0: There is no statistically significant difference between the organization total learning (organizational learning) of firms with work experience of 4 -9 years and

organization total learning (organizational learning) of firms with work experience of 10 years and more.

H1: There is a statistically significant difference between the organization total learning (organizational learning) of firms with work experience between 4 -9 years and organization total learning (organizational learning) of firms with work experience between 10 years and more.

Table 24. Mann-Whitney U Test for Work experience

	Organizational Learning (Total dimensions)
Mann-Whitney U	471,000
Z	-2,396
Asymp. Sig. (2-tailed)	**,017**

Asymp. Sig. (2-tailed) (0,017) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between organization total learning scores (organizational learning) of firms with work experience between 4-9 years and organization total learning (organizational learning) of firms with work experience between 10 years and more. As institutional work experience increases, participation in organizational learning (total dimensions) decreases.

Table 25. Total Scores of the Work Experience with OL Dimensions

Ranks				
	Work experience	N	Mean Rank	Mean
Awareness	Between 0 - 3 Years	25	61,80	19,84
	Between 4 - 9 Years	23	59,65	19,70
	Up to 10 Years	62	51,42	19,00
	Total	110		19,34
Communication	Between 0 - 3 Years	25	60,08	13,64
	Between 4 - 9 Years	23	50,65	13,30
	Up to 10 Years	62	55,45	13,31
	Total	110		13,38
Performance Assesment	Between 0 - 3 Years	25	65,32	15,92
	Between 4 - 9 Years	23	62,57	15,74
	Up to 10 Years	62	48,92	14,31
	Total	110		14,97
Intellectual Cultivation	Between 0 - 3 Years	25	65,30	15,60
	Between 4 - 9 Years	23	57,17	15,04
	Up to 10 Years	62	50,93	14,50
	Total	110		14,86
Environmental Adaptability	Between 0 - 3 Years	25	66,06	15,32
	Between 4 - 9 Years	23	54,85	14,70
	Up to 10 Years	62	51,48	14,44
	Total	110		14,69
Social Learning	Between 0 - 3 Years	25	58,92	7,36
	Between 4 - 9 Years	23	59,20	7,35
	Up to 10 Years	62	52,75	6,84
	Total	110		7,06
Intellectual Capital Management	Between 0 - 3 Years	25	63,36	10,64
	Between 4 - 9 Years	23	56,63	9,96
	Up to 10 Years	62	51,91	9,95
	Total	110		10,11
Organizational Grafting	Between 0 - 3 Years	25	55,50	6,08
	Between 4 - 9 Years	23	60,63	6,35
	Up to 10 Years	62	53,60	6,00
	Total	110		6,09

H0: There is no statistical difference between total score of the firms according to their work experience.

H1: There is a statistical difference between total score of the firms according to their work experience.

Table 26. Kruskal Wallis Test for Total scores of Work experience

	Awareness	Communication	Performance_ Assesment	Intellectual_ Cultivation	Environmental_ Adaptability	Social_ Learning	Intellectual_ Capital_ Management	Organizational_Grafting
Chi-Square	2,410	1,127	6,240	3,756	3,832	1,078	2,430	,862
Df	2	2	2	2	2	2	2	2
Asymp. Sig.	,300	,569	**,044**	,153	,147	,583	,297	,650

Asymp. Sig. (2-tailed) (0,044) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between the total score of the firms according to the work experience of the firms. Therefore; the firms with work experience between 0-3 years in performance assessment have the highest total score. On the other hand, the total score of the firms with work experience between 10 years and more is highest.

Table 27. Non-Parametric Test Results for Work experience and performance Assessment

Ranks				
Work experience		N	Mean Rank	Sum of Ranks
Performance Assesment	Between 0 - 3 Years	25	52,86	1321,50
	Up to 10 Years	62	40,43	2506,50
	Total	87		

H0: There is no statistical difference between the total score of the firms with work experience between 0 - 3 years and the dimension total scores of firms with work experience between 10 years and more.

H1: There is a statistical difference between the total score of the firms with work experience between 0 - 3 years and the dimension total scores of firms with work experience between 10 years and more.

Table 28. Mann-Whitney U Test for Work experience and Performance Assessment

	Performance Assesment
Mann-Whitney U	553,500
Z	2506,500
Asymp. Sig. (2-tailed)	**,037**
a. Grouping Variable: work experince	

Asymp. Sig. (2-tailed) (0,037) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between the dimension total scores of firms with work experience between 0-3 years and the dimension total scores of firms with work experince between 10 years and more. Therefore, participation in the performance assessment dimension decreases as the institutional work experience increases.

3.6.5.5. Age of Institution

Table 29. Non-Parametric Test Results for OL and Age of Institution (1)

	Age of Institution	N	Mean Rank	Mean
Organizational Learning (Total dimensions)	Below to 10 Years	67	57,24	101,40
	Between 11 - 20 Years	36	58,03	100,50
	Up to 21 Years	7	25,86	92,00
	Total	110		100,51

H0: There is no statistically difference between organizations' total organization scores (organizational learning) according to institutional age.

H1: There is a statistically difference between organizations' total organization scores (organizational learning) according to institutional age.

Table 30. Kruskal Wallis Test for Age of Institution (1)

	Organizational Learning (Toplam Boyut)
Chi-Square	6,481
Df	2
Asymp. Sig.	**,039**

Asymp. Sig. (2-tailed) (0,039) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. There is a statistical difference between organizations' total organization scores (organizational learning) according to their institutional ages. In the total dimensions, the organization scores of the firms according to their age are not statistically equal. As the institutional age increases, the level of participation in organization learning decreases.

Table 31. Non-Parametric Test Results for OL and Age of Institution (2)

Ranks				
	Age of Institution	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Below to 10 Years	67	51,79	3470,00
	Between 11 - 20 Years	36	52,39	1886,00
	Total	48		

Table 32. Mann-Whitney U Test for Age of Institution (2)

	Organizational Learning (Total dimensions)
Mann-Whitney U	1192,000
Z	-,097
Asymp. Sig. (2-tailed)	,923

H0: There is no statistically significant difference between organization total learning (organizational learning) of firms with institutional ages between 10 years and less and organization total learning scores of firms with institutional ages between 11 - 20 years.

H1: There is a statistically significant difference between organization total learning (organizational learning) of firms with institutional ages between 10 years and less and organization total learning scores of firms with institutional ages between 11 - 20 years.

Asymp. Sig. (2-tailed) (0,923) > table value Alfa (a= 0, 05). H1 is rejected. H0 is accepted. Therefore, it can be concluded that there is no statistically significant difference between organization total learning (organizational learning) of firms with institutional ages between 10 years and less and organization total learning scores of firms with institutional ages between 11 - 20 years.

Table 33. Non-Parametric Test Results for OL and Age of Institution (3)

Ranks				
	Age of Institution	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Below to 10 Years	67	39,45	2643,00
	Up to 21 Years	7	18,86	132,00
	Total	74		

H0: There is no statistical difference between organization total learning scores of firms (organizational learning) with institutional age between 10 years and less and organization total learning scores of firms (organizational learning) with institutional age between 21 years and more.

H1: There is a statistical difference between organization total learning scores of firms (organizational learning) with institutional age between 10 years and less and organization total learning scores of firms (organizational learning) with institutional age between 21 years and more.

Table 34. Mann-Whitney U Test for Age of Institution (3).

Test Statistics[a]	
	Organizational Learning (Total dimensions)
Mann-Whitney U	104,000
Z	-2,413
Asymp. Sig. (2-tailed)	**,016**

Asymp. Sig. (2-tailed) (0,016) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. Therefore, There is a statistical difference between organization total learning scores of firms (organizational learning) with institutional age between 10 years and less and organization total learning scores of firms (organizational learning) with institutional age between 21 years and more. As the institutional age increases, participation in the organizational learning (total dimensions) dimensions decreases.

Table 35. Non-Parametric Test Results for OL and Age of Institution (4)

Ranks				
	Age of Institution	N	Mean Rank	Sum of Ranks
Organizational Learning (Total dimensions)	Between 11 - 20 Years	36	24,14	869,00
	Up to 21 Years	7	11,00	77,00
	Total	43		

H0: There is no statistically difference between the organization total learning scores of firms (organizational learning) with institution ages between 11 - 20 years and organization total learning scores of firms (organizational learning) with institution ages 21 years and over.

H1: There is a statistically difference between the organization total learning scores of firms (organizational learning) with institution ages between 11 - 20 years and organization total learning scores of firms (organizational learning) with institution ages 21 years and over.

Table 36. Mann-Whitney U Test for Age of Institution (4)

	Organizational Learning (Total dimensions)
Mann-Whitney U	49,000
Z	-2,537
Asymp. Sig. (2-tailed)	**,010**

Asymp. Sig. (2-tailed) (0.010) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. Therefore, it can be concluded that there is a statistically difference between the organization total learning scores of firms (organizational learning) with institution ages between 11 - 20 years and organization total learning scores of firms with institution ages 21 years and over. As the institutional age increases, participation in the organizational learning (total dimensions) dimension decreases.

Table 37. Total scores of the firm's age with OL dimensions

Ranks				
	Age of Institution	N	Mean Rank	Mean
Awareness	Below to 10 Years	67	58,13	19,49
	Between 11 - 20 Years	36	57,90	19,75
	Up to 21 Years	7	18,00	15,71
	Total	110		19,34
Communication	Below to 10 Years	67	54,87	13,37
	Between 11 - 20 Years	36	58,81	13,44
	Up to 21 Years	7	44,57	13,14
	Total	110		13,38
Performance Assesment	Below to 10 Years	67	57,06	15,12
	Between 11 - 20 Years	36	56,14	15,11
	Up to 21 Years	7	37,29	12,86
	Total	110		14,97
Intellectual Cultivation	Below to 10 Years	67	56,31	14,96
	Between 11 - 20 Years	36	58,44	15,11
	Up to 21 Years	7	32,57	12,71
	Total	110		14,86
Environmental Adaptability	Below to 10 Years	67	54,92	14,63
	Between 11 - 20 Years	36	58,03	14,89
	Up to 21 Years	7	48,07	14,29
	Total	110		14,69
Social Learning	Below to 10 Years	67	55,83	7,16
	Between 11 - 20 Years	36	51,94	6,61
	Up to 21 Years	7	70,64	8,43
	Total	110		7,06
Intellectual Capital Management	Below to 10 Years	67	59,58	10,36
	Between 11 - 20 Years	36	50,57	9,94
	Up to 21 Years	7	41,79	8,57
	Total	110		10,11
Organizational Grafting	Below to 10 Years	67	60,37	6,31
	Between 11 - 20 Years	36	45,57	5,64
	Up to 21 Years	7	60,00	6,29
	Total	110		6,09

H0: There is no statistically difference between total score of the firms according to institutional age.

H1: There is a statistically difference between total score of companies according to institutional age.

Table 38. Kruskal Wallis Test for Age of Institution

	Awareness	Communication	Performance_ Assesment	Intellectual_ Cultivation	Environmental_ Adaptability	Social_ Learning	Intellectual_ Capital_ Management	Organizational_Grafting
Chi-Square	10,464	1,330	2,499	4,031	0,645	2,073	3,388	5,482
Df	2	2	2	2	2	2	2	2
Asymp. Sig.	**,005**	,514	,287	,133	,724	,355	,184	,064

Asymp. Sig. (2-tailed) (0,005) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. Therefore, there is a statistical difference between total score of firms according to their institutional age. Awareness is the lowest total score of companies with institutional age between 21 years and more. On the other hand, the total score of the firms with institutional ages between 10 and 20 years is the highest.

Table 39. Non-Parametric Test Results for Age of Institution and Awareness (1)

Ranks				
	Age of Institution	N	Mean Rank	Sum of Ranks
Awareness	Below to 10 Years	67	40,07	2685,00
	Up to 21 Years	7	12,86	90,00
	Total	74		

Table 40. Kruskal Wallis Test for Age of Institution and Awareness

	Awareness
Mann-Whitney U	62,000
Z	-3,212
Asymp. Sig. (2-tailed)	**,001**
a. Grouping Variable: Age of Institution	

H0: There is no statistically difference between the dimension total scores of firms with institutional age between 10 years and below and the firms with institutional age between 21 years and more.

H1: There is a statistically difference between the dimension total scores of firms with institutional age between 10 years and below and the firms with institutional age between 21 years and more.

Asymp. Sig. (2-tailed) (0,01) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. Therefore, there is a statistical difference between the dimension total scores of companies with institutional age between 10 years and below and dimension total scores of companies with institutional age between 21 years and more. Participation in the awareness dimension increases as the institutional age decreases.

Table 41. Non-Parametric Test Results for Age of Institution and Awareness (2)

	Age of Institution	N	Mean Rank	Sum of Ranks
Awareness	Between 11 - 20 Years	36	24,50	882,00
	Up to 21 Years	7	9,14	64,00
	Total	43		

Table 42. Mann-Whitney U Test for Age of Institution and Awareness

	Awareness
Mann-Whitney U	36,000
Z	-2,980
Asymp. Sig. (2-tailed)	**,003**
a. Grouping Variable: Age of Institution	

H0: There is no statistically difference between total dimension scores of firms with institution age between 11 and 20 years and total dimension scores of firms with institutional age between 21 and over.
H1: There is no statistically difference between total dimension scores of firms with an institution age between 11 and 20 years and total dimension scores of firms with a firm age between 21 and over.

Asymp. Sig. (2-tailed) (0,003) < table value Alfa (a= 0, 05). H0 is rejected. H1 is accepted. Therefore, there is a statistical difference between the dimension total scores of companies with institution age between 11 and 20 years and the dimension total scores of firms with institutional age between 21 and over. Participation in the awareness dimension increases as the age of the institution decreases. Otherwise, the institutional age increases, as the participation in the awareness dimension decreases.

3.6.6. Correlation Results

Correlation refers to the direction and power of a linear relationship between two random variables. In this context, correlation of two variables assumed to have normal distribution is obtained by Pearson Correlation analysis.

3.6.6.1. Awareness

According to Table 43, there is a significant correlation between awareness, and performance assessment and again between awareness and intellectual cultivation in this analysis. The correlation coefficients are 0.691, 0.537 respectively. These coefficients show the existence of a strong positive relationship between awareness and performance assessment and again between awareness and intellectual cultivation.

3.6.6.2. Communication

According to Table 43, there is a statistically significant correlation between communication and awareness in this analysis. The correlation coefficient is 0.362. This coefficient shows the existence of a moderate positive relationship between communication and awareness.

3.6.6.3. Performance Assessment

According to Table 43, there is a statistically significant correlation between performance assessment and awareness and again between performance assessment and intellectual cultivation in this study. The correlation coefficients are 0.691 and 0.563 respectively. These coefficients show the existence of a strong positive relationship between perfromance assessment and awareness and again between performance assessment and intellectual cultivation.

3.6.6.4. Intellectual Cultivation

According to Table 43, there is a statistically significant correlation between intellectual cultivation and awareness and again between intellectual cultivation and performance assessment in this study. The correlation coefficients are 0.537 and

0.563 respectively. These coefficients show the existence of a strong positive relationship between intellectual cultivation and awareness and again between intellectual cultivation and performance assessment.

3.6.6.5. Environmental Adaptability

According to Table 43, there is a statistically significant correlation between environmental adaptability and awareness and again between environmental adaptability and performance assessment in this study. The correlation coefficients are 0.334 and 0.462 respectively. These coefficients show the existence of a moderate positive relationship between environmental adaptability and awareness and again between environmental adaptability and performance assessment.

3.6.6.6. Social Learning

According to Table 43, there is a statistically significant correlation between social learning and intellectual capital management and again between social learning and organizational grafting in this study. The correlation coefficients are 0.210 and 0.227 respectively. These coefficients show the existence of a weak positive relationship between social learning and intellectual capital management and again between social learning and organizational grafting.

3.6.6.7. Intellectual Capital Management

According to Table 43, there is a statistically significant correlation between intellectual capital management and awareness and again between intellectual capital management and performance assessment in this study. The correlation coefficients are 0.416 and 0.413 respectively. These coefficients show the existence of a moderate positive relationship between intellectual capital management and

awareness and again between intellectual capital management and performance assessment.

3.6.6.8. Organizational Grafting

According to Table 43, there is a statistically significant correlation between organizational grafting and social learning in this study. The correlation coefficient is 0.227. This coefficient reveals the existence of a weak positive relationship between organizational grafting and social learning.

Table 43. Correlation Results

		Awareness	Communication	Performance_Assesment	Intellectual_Cultivation	Environmental_Adaptability	Social_ Learning	Intellectual_Capital_ Management	Organizational_Grafting
Awareness	Pearson Correlation	1	,362**	,691**	,537**	,334**	-,215*	,416**	-,152
	Sig. (2-tailed)		,000	,000	,000	,000	,024	,000	,112
	N	110	110	110	110	110	110	110	110
Communication	PearsonCorrelation	,362**	1	,262**	,329**	,263**	-,190*	,178	-,038
	Sig. (2-tailed)	,000		,006	,000	,005	,047	,063	,691
	N	110	110	110	110	110	110	110	110
Performance Assesment	Pearson Correlation	,691**	,262**	1	,563**	,462**	-,130	,413**	,000
	Sig. (2-tailed)	,000	,006		,000	,000	,176	,000	,996
	N	110	110	110	110	110	110	110	110
Intellectual Cultivation	Pearson Correlation	,537**	,329**	,563**	1	,269**	-,087	,356**	-,024
	Sig. (2-tailed)	,000	,000	,000		,005	,368	,000	,806
	N	110	110	110	110	110	110	110	110
Environmental_Adaptability	Pearson Correlation	,334**	,263**	,462**	,269**	1	,199*	,319**	,030
	Sig. (2-tailed)	,000	,005	,000	,005		,037	,001	,752
	N	110	110	110	110	110	110	110	110
Social Learning	Pearson Correlation	-,215*	-,190*	-,130	-,087	,199*	1	,210*	,227*
	Sig. (2-tailed)	,024	,047	,176	,368	,037		,028	,017
	N	110	110	110	110	110	110	110	110
Intellectual Capital Management	Pearson Correlation	,416**	,178	,413**	,356**	,319**	,210*	1	,160
	Sig. (2-tailed)	,000	,063	,000	,000	,001	,028		,096
	N	110	110	110	110	110	110	110	110
Organizational Grafting	Pearson Correlation	-,152	-,038	,000	-,024	,030	,227*	,160	1
	Sig. (2-tailed)	,112	,691	,996	,806	,752	,017	,096	
	N	110	110	110	110	110	110	110	110

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

CHAPTER FOUR

DISCUSSION

This study investigated the relationship between organizational learning from knowledge management perspectives and firm's age, area of activity, place and owner's education level as well as work experience. This section begins with discussion of research findings and then limitations and implications are given for further research. Final section concludes along with contributions of the study on the literature.

4.1. DISCUSSION AND RESEARCH FINDINGS

The research data was analyzed by using SPSS 22 software to estimate and calculate the research model. Templeton, Lewis and Synder's (2002) organizational learning instrument used for analysis is composed of 8 dimensions including awareness, communication, performance assessment, environmental adaptability, intellectual cultivation, social learning, intellectual capital management and organizational grafting. Then Templeton developed this instrument used in the analysis by getting inspired from Huber's (1991) four construct from knowledge perspectives (four knowledge management constructs) being as knowledge acquisition, information distribution, information interpretation and organizational memory.

Before beginning the explanation of detailed research model, the findings of the research model, the study verify that there are good correlations in organizational learning dimensions. Reliability of the study shows that Cronbach alpha value for substance validity was found to be between 0,773 and 0,806 for the analysis of the

validity of each individual question. Additionally, correlations among organizational learning dimensions have significant value. For instance; awareness, performance assessment, intellectual cultivation have strong correlations.

Since the variables are not normally distributed, non-parametric hypothesis tests are used in the study. Non-parametric test results show that organizational learning in knowledge management perspectives is significantly related to awareness and performance assessment dimensions in firm's age and owner's work experience. This means that related hypotheses are accepted in this study. To sum up, H2 and H5 hypotheses are accepted but H1, H3 and H4 hypotheses are rejected in this study.

H2 hypothesis concerning work experience is accepted in this study. According the results, there is a significant difference between organizational learning and owner's work experience. As work experience increases, the level of participation in organizational learning decreases in the study. Furthermore, there is a difference between performance assessment in organizational learning and owner's work experience. As the owner's work experience increases, the participation in performance assessment decreases. In this way, the performance assessment can be difficult as work experience increases in the firms. One of the reasons might be the job complexity or individual differences in terms of using knowledge or skills, where, as the complexity increases it can be imagined that related performance assessment criteria may also become more complicated. Another significant positive relation is the one between work experience and performance assessment. A potential reason for this relationship might be the usage of more professional methodologies for assessing organizational performance which expectedly evolve by the help of increased experience. Increased work experience in this context may end up with improved knowledge on work practices along with the formation of more detailed operating procedures in the workplace.

H5 hypothesis concerning firm's age is accepted in this study. According to the results, it can be concluded that organizational learning with all dimensions are different with firm's age in the study. As firm's age increases, the level of participation in organizational learning decreases. Additionally, there is a difference

between awareness in organizational learning and firm's age according to the results. As firm's age decreases, the participation in awareness increases in the base of organizational learning activities. It can be sensed that older firms may limit their search for new knowledge since they might think that they have been completed the formation of their organizational memory and already procedurized their business processes. According to the study, the firm's age between 10 and below and firm's age between 21 and over have different results in terms of participation in organizational learning. In this way, it can be considered that the firm's age between 10 and below is more aware of the implementation of organizational learning activities.

Awareness is an important notion for managers in terms of their performances during different phases KM implementation activities. Valaei and Aziz (2012) highlighted that "awareness of KM at management levels" (p: 6). They underline importance managers' behavior in knowledge management activities such as learning, knowledge-sharing, preparing meetings and annual reports in accordance with organizational purposes. Especially for software companies, Gopalkrishna, Rodrigues, Poornima and Manchanda, (2012) state that the degree of awareness in knowledge management has remarkable value.

Other contributions of age are on expansion and innovation. Young companies grow in faster than older companies (Coad, 2009) in Coad, Daunfeldt and Halvarsson (2014). Felekoglu (2007) has reviewed several studies and found that younger firms enable to produce better innovation in Noordin and Mohtar (2014).

Table 44. Summary of Hypotheses

Hypotheses	**Results**
H1: There is a difference between Hacettepe techno parks and Ankara techno parks in terms of organizational learning in Ankara.	**Rejected**
H2: There is a difference between organizational learning and owner's work experience.	**Accepted**
H3: There is a difference between organizational learning and firm's area of activity	**Rejected**
H4: There is a difference between organizational learning and owner's education level.	**Rejected**
H5: There is a difference between organizational learning and firm's age.	**Accepted**

CHAPTER FIVE

CONCLUSION

5.1. CONCLUSION, LIMITATION AND FURTHER RESEARCH

This study investigates the links between organizational learning dimensions under knowledge management perspectives and characteristics of the firms for a sample group of 110 ICT/Software firms in techno-parks of Ankara. The analysis of the study performed by using SPSS 22 statistical package for social sciences.

The study confirms that, with a KM point of view, between organizational learning and firm's age and owner's work experience are mainly related. The analyses are respectively started with demographic features of sample, reliability, non-parametric tests and correlation.

Non-parametric tests show that the hypotheses related to dimensions of organizational learning; such as awareness and performance assessment are significantly different with firm's age and owner's work experience. Therefore, H2 and H5 hypotheses are accepted Furthermore, the correlations with awareness, performance assessment, intellectual cultivation are relatively high. Additionally, reliability of this research is high.

It can be concluded that characteristics of ICT/Software firms in study sample conforms to related hypotheses. Related firms manage and operate their resources intensively under knowledge based structure and do also have research and development implementations. Furthermore, related firms support their employees for creating and sharing knowledge.

The sample of the ICT/software firms in question are open systems and have flat structure. Communication in these firms is very strong and easily applied through networks, interactions among workers with the help of technology based communication systems. In addition to this, intellectual capital has a vital role in these firms' knowledge management practices because it includes main assets of the firm such as suppliers, customers, shareholders and so on.

Regarding the research, there are several limitations. The first limitation is due respondent reactions. Some of the respondents have prejudices for survey implementation due to their firm policy issues. Another limitation is due to the geographical dispersion of the firms. The study is conducted in Ankara Province techno parks which moderate number of ICT/Software firms. Third limitation is due to the firm scale under consideration. The sample size is mainly comprised of small and medium sized firms. However, more institutionalized firms might have more professional knowledge management architectures.

This study contributes to understanding of the profile of organizational learning related knowledge management practices in small and medium sized ICT/Software firms in territorial terms, since, in the literature the number of similar studies for Ankara province is relatively low. There is a significant relationship between organizational learning from knowledge management perspectives and demographic features of the firms including age and work experience.

The results including the relation between awareness, performance assessment in knowledge management perspectives and firm's age as well as owner's work experience underline the contribution of the study onto the literature; regarding the fact that number of studies searching a similar connection in Turkey is again relatively low.

Further research include implementation of a similar study for greater scale and more institutionalized ICT/Software firms, both in Ankara province and additional territories such as Marmara Region. Furthermore, investigation of similar connection for additional knowledge-intensive sectors such as finance and machinery

production may display different dimensions between knowledge management and organizational learning. Additionally, a causality analysis between performance assessment and awareness may also be conducted for different sectors.

As practical implementations; since, intellectual cultivation is not displayed in knowledge management practices, an increase in professional learning programs as knowledge modules and launching of more incentives in order to manage knowledge resources for employees such as e-learning, group learning or individual learning may empower the missing relation. In fact, dimensions of the relations deduced may also be used to improve the content of the learning programs mentioned. Moreover, same connections can also be taken into account while using decision support systems, where, more significant dimensions can be included in related system architectures. Therefore, to create more about the awareness of the learning for expanding problem-solving and making decisions results concerning knowledge management implementations can be beneficial. As organization's learning capability improves, competitive benefits will be sustained in the global environment. Besides, organizations must be aware of clear understanding of interactions with communication channels for effective formal information flows since it's facilitate the different organizational learning process.

In addition, funding opportunities for small and medium sized firms can be improved in order to provide them required technology updates. In this context, the firms can be able to develop their capital structures in a way to invest for intellectual capital and technology architectures for implementing knowledge management tools and learning modules in their systems. Moreover, the firms may acquire their capabilities from outside environments to reach maximum performance in the areas of education, training, and employee mobility. Such practices may provide strong relations among the firms on different networks in which knowledge and information is shared. Additionally, variety of dimensions stated throughout this study also demonstrate the diverse profile of learning supported knowledge management implementations which also allow acquision and implementation of knowledge from different sources (both internal and external). This acquisition may create a favorable business environment with lesser discrimination (e.g. in areas of idea sharing, human

resources management and decision making) regarding the universal profile of knowledge. In fact, this may indicate that firms are ready to succeed on the way to its vision. Related knowledge management applications may also contribute to improvement of both formal and informal communication channels in the firms which can serve almost for the same purposes indicated in the previous sentence.

The results of this study may help to understand the importance of knowledge management and organizational learning in practice.

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APPENDIX

APPENDIX A: Survey Instrument

	Sorular	Kesinlikle Katılmıyorum	Katılmıyorum	Orta	Katılıyorum	Kesinlikle Katılıyorum
1	Çalışanlar, belirli bir bilgiye ihtiyaç duyduklarında,kimden temin edeceğini bilir.					
2	Yönetim, önemli örgütsel performans değişkenlerini takip eder.					
3	Yönetim, sorunlara proaktif(temkinli) bir şekilde yaklaşır.					
4	Üst Yönetim, bilgiyi örgütün farklı bölümlerinden alarak bütünleştirir.					
5	Çalışanlar, bilgilerinin şirkette neye hizmet edeceğinin kesinlikle farkındadır.					
6	Çalışanlar iletişim için elektronik araçları kullanır. (telefon, e-posta,internet vs.)					
7	Çalışanlar, aralarından seçim yapabildikleri birçok türde iletişim aracını kullanır.(telefon,e-posta,internet vs.)					
8	Çalışanlar, açık bir şekilde iletişim kurmaları için cesaretlendirilir.					
9	Kurum, performansın tüm aşamaları ile ilgili olan verileri toplar.					

APPENDIX A (Continued): Survey Instrument

10	Kurum, faaliyetlerin yönlendirilmesi için detaylı bilgiyi saklar.					
11	Kurum içinde resmi veri yönetimi faaliyeti vardır.					
12	Yönetim, çalışanları karar vermeye katkı sağlayan model ve çerçevelerin kullanımı için cesaretlendirir.					
13	Kurum uzmanlarını kendi bünyesinde geliştirir.					
14	Yönetim, kurumun ortaklarından öğrenir. (Müşteriler,tedarikçiler ve ortakları gibi)					
15	Yönetim, çalışanlarını çapraz eğitim için kurumun diğer bölümlerinde de görevlendirir.					
16	Yönetim, kurumuyla ilgili yeni şeyleri doğrudan gözlemleyerek öğrenir.					
17	Çalışanlar işlerini desteklemek için bilgi sistemlerini yoğun olarak kullanır.					
18	Kurum, yoğun bir şekilde elektronik depolama araçları kaynağını kullanır. (veritabanı,veri ambarı, doküman tarama gibi)					
19	Kurum, teknolojik değişimlere yavaş bir şekilde ayak uydurur.					
20	Çalışanlar karar verirken arşivlenmiş bilgiden yararlanır.					
21	Çalışanlar bilgileri diğer çalışanlardan saklar. (rakamlar,planlar,fikirler gibi)					
22	Çalışanlarımız işlerin yeni yapılma şekillerini uygulamaya direnç gösterir.					

APPENDIX A (Continued): Survey Instrument

23	Çalışanlar, kurumla ilgili son gelişmeleri resmi olmayan kanallardan öğrenir. (anlatılan yeni hikayeler ve dedikodu gibi).					
24	Kurum, birimlerini (departman, alt birim) kısa dönemli finansal kazanç sağlamak için kurar.					
25	Kurum karma yeteneğe sahip çalışanlardan bir havuz oluşturur.					
26	Kurum, alanında uzmanlaşmış veya bilgili kişileri işe alır.					
27	Yönetim, rakiplerinin üst yönetim stratejilerini önemsemez.					
28	Kurum içi yetkinliklerde eksiklik olduğunda,onları dışardan temin ederiz.					

DEMOGRAFİK ÖZELLİKLER (X) koyunuz.

1	Eğitim Durumu	Lise	Üniversite	Yüksek Lisans	Doktora
2	İş Tecrübesi	0-3 yıl	4-9 yıl	10 yıl ve üstü	
3	Kurum Türü	Ankara Teknopark (X)		Hacettepe Teknopark (X)	
4	Faaliyet Alanı	Yazılım (X)		Bilgi İletişim Teknolojileri (X)	
5	Kurum Yaşı	10 yıl ve altı	11-20 yıl	21 yıl ve üstü	

RELIABILITY ITEMS(QUESTIONS)

Item-Total Statistics

	Cronbach's Alpha
1- Çalışanlar, belirli bir bilgiye ihtiyaç duyduklarında,kimden temin edeceğini bilir.	,782
2- Yönetim, önemli örgütsel performans değişkenlerini takip eder.	,779
3- Yönetim, sorunlara proaktif(temkinli) bir şekilde yaklaşır.	,781
4- Üst Yönetim, bilgiyi örgütün farklı bölümlerinden alarak bütünleştirir.	,774
5- Çalışanlar, bilgilerinin şirkette neye hizmet edeceğinin kesinlikle farkındadır.	,782
6- Çalışanlar iletişim için elektronik araçları kullanır. (telefon, e-posta,internet vs.)	,784
7- Çalışanlar, aralarından seçim yapabildikleri birçok türde iletişim aracını kullanır.(telefon,e-posta,internet vs.)	,786
8- Çalışanlar, açık bir şekilde iletişim kurmaları için cesaretlendirilir.	,781
9- Kurum, performansın tüm aşamaları ile ilgili olan verileri toplar.	,773
10- Kurum, faaliyetlerin yönlendirilmesi için detaylı bilgiyi saklar.	,774
11- Kurum içinde resmi veri yönetimi faaliyeti vardır.	,773
12- Yönetim, çalışanları karar vermeye katkı sağlayan model ve çerçevelerin kullanımı için cesaretlendirir.	,773
13- Kurum uzmanlarını kendi bünyesinde geliştirir.	,783
14- Yönetim, kurumun ortaklarından öğrenir. (Müşteriler,tedarikçiler ve ortakları gibi)	,778
15- Yönetim, çalışanlarını çapraz eğitim için kurumun diğer bölümlerinde de görevlendirir.	,777
16- Yönetim, kurumuyla ilgili yeni şeyleri doğrudan gözlemleyerek öğrenir.	,783
17- Çalışanlar işlerini desteklemek için bilgi sistemlerini yoğun olarak kullanır.	,783
18- Kurum, yoğun bir şekilde elektronik depolama araçları kaynağını kullanır. (veritabanı,veri ambarı, doküman tarama gibi)	,780
19- Kurum, teknolojik değişimlere yavaş bir şekilde ayak uydurur.	,802
20- Çalışanlar karar verirken arşivlenmiş bilgiden yararlanır.	,781
21- Çalışanlar bilgileri diğer çalışanlardan saklar. (rakamlar,planlar,fikirler gibi)	,797
22- Çalışanlarımız işlerin yeni yapılma şekillerini uygulamaya direnç gösterir.	,793
23- Çalışanlar, kurumla ilgili son gelişmeleri resmi olmayan kanallardan öğrenir. (anlatılan yeni hikayeler ve dedikodu gibi).	,803
24- Kurum, birimlerini (departman, alt birim) kısa dönemli finansal kazanç sağlamak için kurar.	,786
25- Kurum karma yeteneğe sahip çalışanlardan bir havuz oluşturur.	,777
26- Kurum, alanında uzmanlaşmış veya bilgili kişileri işe alır.	,783
27- Yönetim, rakiplerinin üst yönetim stratejilerini önemsemez.	,806
28- Kurum içi yetkinliklerde eksiklik olduğunda,onları dışardan temin ederiz.	,790

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EDUCATION

Degree	**Institution**	**Year of Graduation**
MS	Cankaya Uni. Business Administration (English)	2017
BS	Cankaya Uni. Translation and Interpreting Studies (English)	2013
CERTIFICATE	Baskent Uni. Human Resources Management	2014 (5 weeks)
CERTIFICATE	Goethe Institute.German Language.	2010/2012

WORK EXPERIENCE

Year	**Place**	**Enrollment**
2011	TBMM	Foreign relations-internship

FOREIGN LANGUAGES

English, German and Azerbaijani.

HOBBIES Traveling, Painting, Reading and Running.