

An Application of Corporate Knowledge Management Model on A Transportation Company

*¹Seher Arslankaya, ²Cem Özkurt ve ¹Zeynep Demir

¹Sakarya University, Faculty of Engineering, Industrial Engineering, Sakarya, Turkey

²Sakarya University of Applied Sciences, Sakarya, Turkey

Abstract

Today, the greatest power that institutions have is knowledge. On an institutional basis, the value and use of knowledge has increased compared to previous ages, and became noticeable. Today, knowledge is the basics of everything that goes forward. So, people and institutions who do not know what they have about the knowledge are taking steps towards retrenchment. As a result, the management of the great and precious knowledge has come to face as one of the needs of today. There are many knowledge management models in the field of knowledge management. When we deal with corporate knowledge management, this situation is even more important. Institutions must have the knowledge of the staff (individual) working within them. Otherwise, they will have to maintain their existence as a human-dependent and inaccessible organization. It is necessary to manage institutional knowledge to improve the performance of the institution, in order to make the flow of knowledge between all levels clear to have available and understandable knowledge. An enterprise knowledge management model is used to manage corporate knowledge. In this study, a large transportation company operating in Istanbul was dealt with. Corporate Knowledge Management Model (Knowledge Tower) has been applied for all stages of the firm. The results of the implementation are assessed and scored for the institution and the missing parts for the company are presented as suggestions.

Key words: Knowledge, Knowledge Management, Corporate Knowledge Management Model

1. Introduction

The concept of knowledge is that we use all the time in our everyday life, but it is difficult to identify. Different definitions of this concept have been made as much in the daily routine. These definitions are shaped according to historical and social conditions and are usually confined to the contexts at the time definitions are made. [1], In other words, each definition has a meaning and these meanings can gain different meanings in different societies or times [2]. See also about this subject in. [3], [4], [5], [6], [7], [8], [9], [10]. Knowledge is a valuable asset for an organization like a corporate firm, educational institution, government organization, non-governmental organization or an industrial organization. Clearly, it is to manage this knowledge in such a way that it can be efficiently stored, shared, distributed and reused. The main tasks of knowledge workers are the identification and selection of sources of knowledge and the acquisition and modification of different types of knowledge. The development of innovative techniques for extracting knowledge from various sources is indispensable to the process of acquiring knowledge. In this context, group based studies, natural language processing, and these like techniques can draw the attention of the research community and play an important role in financing public and private organizations. [11].

Knowledge is a very important resource to ensure competitive advantage in businesses and to make this superiority sustainable. Most of the work done today is accomplished within the framework of knowledge. Organizations compete on the basis of knowledge, products and services become more valuable day by day with crucial knowledge components, and lifelong learning becomes a reality of institutions. [12]. See also in [13], [14], [15], [16] [17]. Organizational learning is a knowledge creation process largely related to the acquisition, dissemination and interpretation of customer and competitor related information. [17]. For Yu and his colleagues organizational learning is an effort that strives to harness intellectual and social capital of organizational members through which it boosts their competence. [18]

It is important to note that the data, information and knowledge can not be used in place of each other, no matter how simple it looks. Even if these concepts have different definitions, the boundaries between them are not very clear. [19]; The success or failure of the organization often depends on which of these it needs, which one it has, and what it can and can not do with it. [6]. See also in. [20], [21].

[22] Explain these concepts as follows:

- Data: Unstructured, unprocessed raw facts obtained through research, creation, collection and discovery.
- Information: Data in a context is informational. It is a verb that is arranged to make inference. The information is more structured and more meaningful than the data.
- Knowledge: It occurs through different perspectives and experience. Despite the static nature of the information, knowledge is still alive because the meaning is added.

In the ages we live, knowledge has become a great force. Institutions should best manage their knowledge so that they can compete, grow, and survive [23]. For this reason, knowing what you know on an institutional basis is very important besides transferring of the knowledge of the individual to the institution has made it important to turn the implicit knowledge into open knowledge.

2. Materials and Method

In the years following the Second World War, technological advances, agriculture and industrial societies have come to a new stage. Like the jet engine, rockets and space studies; atomic bomb, nuclear energy and thermonuclear energy studies; plastics; developments in researches; television and worldwide telephone service; as a result of developments such as transistors, integrated circuits, microprocessors, dense semiconductors and software, a new technological revolution has been experienced and is being experienced now in the world. This second technological revolution, called the Technical Revolution began in America and rapidly spread to Japan, while western Europe seeking to capture it [3]. [24] 'defined knowledge management as "the right knowledge is gathered from the right source at the right time so that the best judgment can be made".. [25] stated that "the process by which businesses are used to identify, acquire and create value to strengthen competition with other companies". Also related to the subject see [26], [27], [28], [29], [30], [31], [32]. The direct and indirect aims of knowledge management are to reveal, evaluate, organize, deliver to all the places where necessary and add indirect value to the institution. Companies should

know well how they use knowledge, because knowledge forms the intellectual capital of a company and the importance of managing knowledge is crucial. [23]

Managing knowledge in institutions is becoming more and more important every day. The need to produce, obtain, update and store new knowledge is increasing day by day. In this context, the importance of knowledge management activities is also increasing. [33] list the main benefits of knowledge management as follows :

The organization provides critical expertise,

- Provides greater adaptability and flexibility,
- Provides a higher conversion to human money investment
- Increase the competitive advantage,
- Value aggregation and creation
- Provides legal protection for intelligent goods,
- Knowledge on products and services
- Customer-focused.

It is not easy to manage knowledge in organizations, as it is vital for the organization that it is very useful for knowledge management. Due to the nature of the knowledge being so tangible and measuring too much, it is imperative that knowledge management activities develop customized methods for the organization. Standard knowledge management models are being developed and proposed, but it seems that they are being overlooked in an integrated way. This makes it difficult to uncover the benefits of their work. [34]

Among the disadvantages that arise when knowledge management is inadequate :

- Loss of productivity
- Convenient waste of time,
- Overloading knowledge,
- Knowledge erosion,
- There are disadvantages such as the risk of re-inventing the wheel.

Many knowledge management models have emerged as a result of efforts to capture knowledge, store and manage of it. Different definitions and understandings emerging in knowledge and knowledge management have also been effective in the formation of different knowledge management models and different classifications also have emerged. SECI is one of the models developed for institutional governance of knowledge and is a model developed by Nonaka and Takeuchi. Accordingly, the model consists of socialization (covert knowledge), unification (open knowledge), externalization (covert knowledge), and internalization (open knowledge) [35]. Although the concepts of implicit and explicit knowledge have been used in the past and the most important study affecting knowledge management in this regard has been the book named as “The Company that creates knowledge” published by Nonaka and Takeuchi in 1995. Implicit knowledge is a form of knowledge that is articulated, spelled out in words, difficult to write. Explicit

knowledge, on the other hand, represents content that can be articulated through words, voice recordings or pictures. Explicit knowledge is usually found in concrete and written form when it is found in the head of implicit knowledge [36]

Tiwana's 10-step knowledge management is a well-known model and it describes the 10 step knowledge management model consisting of 4 stages and evaluation of the infrastructure, analyzing, designing and developing the knowledge management system, deploying and disseminating the system and finally evaluation. See for Tiwana knowledge management model. [37]. Nonaka's model is a knowledge management model that conceptually expresses knowledge management. This model basically considers knowledge management as a process of knowledge creation and assumes that implicit knowledge can be transferred through the socialization process and the implicit knowledge can be made explicit by externalization process. For more knowledge on Nonako's model see [38]. Lawton's proposal as "Knowledge Management Architecture Model" is composed of seven levels. At the bottom, knowledge is raw and first processed and there are on the top layers the personalized knowledge gateways and business knowledge application management systems [39]. The logic of EvEr knowledge management model developed by Aksoy includes continuous progress, adaptation of results and knowledge-intensive culture. This model consists of 5 phases as facilitators, strategies, architecture, organizational structure and evaluations [34]. All approaches emphasize the different dimensions of knowledge management processes and there are different views on the number of these dimensions. These processes are the creation, storage, distribution and implementation of knowledge [40].

One of the knowledge management models handled in this study is the Knowledge Tower Model with the other name of Corporate Knowledge Management model. As seen in figure 1, 9 module level measurement will be realized within the Knowledge Tower Model. To measure the ability to use and evaluate knowledge at these levels, measurements will be made using around 625 sub-criteria, which are set for strategic, tactical, and operational levels, based on the 22 criteria given below.



Figure 1: Criteria model element relations

2.1. Theory/calculation

The model consists of 9 modules and each module is explained with many different criteria from 22 criteria. For example, Module 2 comprises design and implementation of knowledge management processes and 1,2,3,4,9,10,13,14,15,16,17,18,19,21 criteria. And they are also interpreted by these criteria. Each criteria contains 3 levels and these levels are strategic, tactical and operational. These criteria affecting each module of knowledge management are examined in three stages. The reason for this is to target everyone's common contribution from the bottom layer to the top layer on an institution basis. For example, 2.criteria is "to provide knowledge sharing and to be accessible." In this context, it is expected that the activities carried out in the institution for the continuous control of knowledge accessibility and prevention of problems as much as knowledge exists are expected [23]. The Enterprise Knowledge Management Model aims to make the individual's knowledge as a knowledge of the institution. Companies that use the EKMM should ensure that innovation is improved through this knowledge management model. It contributes to the development of product and product services. It improves the quality level, contributes to the increase of sales, and it makes it much easier to decide as an important situation. This ultimately affects the customer's affinity and customer relationships positively. As a result, the EKMM increases productivity in each area within the organization.

As seen from the figure 1, 9 module level measurement will be realized within the Knowledge Tower Model. In order to measure the ability to use and evaluate knowledge at these levels, metrics will be performed by using the following 22 criteria, each with 625 sub-criteria set for strategic, tactical, and operational levels. Relations between model 9 and 22 criteria are given in Table 1.

In the measurements made, all evaluations will be performed over 1000 points in total. For each component of the model, there is a score scale based on each criterion and sub-criterion. As given in Table 2, scores were generated for each component of the model in terms of strategic, tactical and operational aspects. These scores, which are determined by the Nominal Group Technique (conducted by the participation of academicians and industrialists), are distributed to the sub-criteria and the expected and actual scores are compared and the score that the organization can get over 1000 points is determined.

The Enterprise Knowledge Management Model had nine interrelated modules and we had twenty-two evaluation criteria to measure each module. These criteria also had sub-criteria in their own right. Criteria and evaluation scores related to each module were determined. Afterwards, the application was made in the organization and the criteria were asked to the individual administrators. The responses were multiplied by the sub-criteria scores and the strategic, tactical and operational level scores were obtained. These three levels are summed to obtain the main criteria points. The main criterion scores were also multiplied by the initially determined percentage values and the modular score was obtained. Relations between 9 model components and 22 criteria are given in Table 1.

Table 1: Criteria model element relations

No	Model element	Relevant Criteria	Explanation
1	Formation of the Knowledge Infrastructure	5,9,11,12,15,16,17,18,19	With this model element, the state of the knowledge infrastructure necessary for the healthy development of enterprise knowledge management activities is assessed and the gaps are pointed out
2	Design and implementation of knowledge management processes	1,2,3,4,9,10,13,1,15,16,17,18,19,21	Knowledge processes evaluates how healthy are the knowledge search, monitoring, acquisition and discovery, knowledge production and use, knowledge storage, knowledge updating, knowledge transfer and sharing, knowledge control, being done and as well as points out the lack of activity..
3	The use of knowledge display methods	1,2,15,16,17,18,19,21	Knowledge display methods evaluates the reporting standards, computer archiving, etc.and points to the lack of knowledge.
4	Planning of institutional knowledge and use	3,4,9,10,15,16,17,18,19,22	Evaluates the plans created to ensure that the knowledge is used in the right place at the right time and with the right people and points out the gaps.
5	Creation and implementation of knowledge management strategies.	8,9,13,14,15,16,17,18,19,20,22	The application of strategies to ensure that organizational knowledge is assessed in the most effective manner and the gaps are pointed out..
6	Knowledge-driven organization.	6,9,12,15,16,17,18,19	Determining the responsibilities for the objectives, activities and tasks to be fulfilled in order to be able to fulfill the organizational function have been assigned correctly.And the gaps are pointed out.
7	Creation of knowledge culture	3,7,9,13,14,15,16,17,18,19,22	The creation of an effective, productive and reliable knowledge management understanding in the environment where all the behaviors of employees at all levels of the organization are shared with each other in order to base their knowledge, believe in the power of knowledge and constantly renew and update their knowledge is assessed and the gaps are pointed out.
8	Knowledge lifting and routing	4,13,14,15,16,17,18,19,20	Individuals are provided with the knowledge they need and experience enhancing activities are assessed and the gaps are pointed out..
9	Evaluation of knowledge management activities	15,16,17,18,19	It is assessed whether or not effective knowledge management is carried out within the organization and individual intellectual capital that an institution possesses is used as a positive value, and the gaps are pointed out.

Table 2: Knowledge Tower Evaluation Point Distributions

Knowledge management element	Operational level	Tactical level	Strategic level	Total
1- IT infrastructure	45	45	60	150
2- Designing and implementation of knowledge management processes	35	40	50	125
3- The use and effectiveness of knowledge display methods	25	30	35	90
4- Institutional knowledge and planning of use	40	40	30	110
5- Creation and implementation of knowledge management strategies	55	35	30	120
6- Organizationally knowledge-intensive organization	40	40	30	110
7- Creation and protection of knowledge cultures	40	30	30	100
8- Leverage and routing of organizational knowledge	30	35	30	95
9- Evaluation of knowledge management applications in the organization	40	30	30	100
Total	350	325	325	1000

3. Results

The transportation company we applied to the Enterprise Knowledge Management Model is a large organization that serves Istanbul's Anatolian and European sides in bus, metro, metrobus and tram areas. Management of knowledge in these like organizations which is not easy to manage, is very difficult to gain personal knowledge from itself. As a result, the company transports a total of 12 million passengers in one day by railway transportation, sea and land route. The company realizes 12 million customer requests per day with managing all the employees in the system that can manage the supply that will meet this demand every day. In this case, the enterprise brings a great deal of knowledge traffic. Organizations that do not know where and how they hold knowledge, can be influenced by even the smallest amount of knowledge migration and it can take time to grieve. For this reason, the Enterprise Knowledge Management Model is becoming a necessity for the organizations. The large organizations like this company we applied the EKMM wants to know the ratio of their knowledge using and to improve it. With the EKMM, it is very important to know what level of deficiencies are in the area in which the knowledge is used in organizations. In other words, the more it is important to manage the organization, the more important it is in managing the knowledge. In this respect, intellectual capital is the building blocks of organizations. Organizations seeking to manage the knowledge they possess will want to see their intellectual capital. The EKMM is providing all this capital to see.

1. Evaluation of IT Infrastructure: The IT infrastructure is concerned with criteria 5,9,11,12,15,16,17,18. As a result of this application, this module got 78,55% points. The necessary infrastructure has been established for the organization. Especially at strategic level, the use of knowledge infrastructure is quite good in performance. The firm supports the use of knowledge-based management tools. But they are at a very bad point in protecting intellectual capital. The company has not been able to secure and control knowledge. In this sense, the organization does not respect the rights of intellectual property and therefore it causes great difficulties in producing new knowledge. The firm does not evaluate returns for correcting deficiencies. The current knowledge is very good in terms of sharing usage. E-mail, databases, company networks and all kinds of knowledge can be used and shared easily. The company knowledge system is open for all levels. However, employees at the operational level are not allowed to share knowledge. There is no storage of knowledge produced for the operational level. And there is no activity to improve the firm's IT infrastructure. For the transportation company, we can suggest the following regarding the IT infrastructure: the company uses the IT infrastructure at a very good level, especially at strategic and tactical levels. However, in order to provide knowledge management at the operational level, it is necessary to establish an infrastructure for this level to share knowledge, knowledge and access to knowledge. In addition, intellectual property rights must be considered on behalf of the person sharing the knowledge. The firm should increase knowledge sharing by supporting this IT infrastructure. Although the IT infrastructure is very good at this company, the biggest deficiencies are in the preservation of security of knowledge. They should use the system in which the IT infrastructure ensures legal knowledge security by evaluating the feedback they receive from the troubles experienced in this area.

2. Evaluation of knowledge management processes: 1,2,3,4,9,10,13,14,15,16,17,18,21 are relevant to the management processes of knowledge. As a result of this application, this module

has a score of 69.32%. The use of the organization's decision support systems, the use of integrated knowledge systems are reasonably good, and this contributes to the development of the firm on a tactical level. It is supported by the employee to perform special purpose brainstorming in the required subject to be studied. For this reason, it provides maximum benefits in knowledge management processes on strategic and tactical knowledge sharing and use. But at the operational level, knowledge management and sharing are relatively small. The master-apprentice relationship is not good. The use of knowledge management processes is lacking in the protection of intellectual capital. With respect to knowledge management processes for the transportation company, we may suggest that: the organization should increase its activities in knowledge management processes at the operational level in order to increase its intellectual capital, and the employees must be informed about knowing the property of knowledge at personal level. At the operational level, key points of knowledge should be identified and the use of knowledge management activities in the management of these elements should be transformed into a business culture.

3. Evaluation of knowledge display: 1,2,15,16,17,18,19,21 are relevant to the notation of the knowledge display. As a result of this application, this module has a score of 66.13%. This shows that the company is good at the senior employee class in knowledge sharing and display. But the organization can not demonstrate an innovative and persistent attitude when it is lacking in knowledge sharing and access, even though it can do so well. The company uses display methods to present the knowledge to be used in in-house strategic planning studies. Knowledge display methods enable management activities and streamline knowledge flow. For the strategic level, the use of knowledge display tools, graphics, presentations is done at a high level. There is an attitude that avoids risk in the presentation of internal knowledge. The organization does not provide knowledge display at strategic level instead of risk management. With respect to knowledge display of the transportation company, we may suggest that the organization should systematically establishes the knowledge display at the tactical and operational level, and the knowledge that can come from the lower levels should be summed up with clear knowledge display methods. It should be able to manage the risks of in-house knowledge display well, avoid misknowledge and knowledge misgivings. For this, training of methods of displaying knowledge at all levels should be given. The use of databases within the operational and tactical level is very small and the use of databases for improvement should be expanded.

4. Evaluation of knowledge planning: The planning of the knowledge is related to criteria 3,4,9,10,15,16,17,18,19,22. As a result of this application, this module has 67.2% points. This means that 67.2% of institutional knowledge is planned. The authority determines the need for new markets, measures market conditions and takes measures for changes. While the organization does not show an innovative attitude, customer satisfaction principle is always taken into consideration. The company assesses possible crisis scenarios as it appeals to high customer volume. There is a yearly forecasting methodology and policies to estimate customer demand as the greatest support for knowledge planning. The market expansion plans are based on these estimations. Regarding the planning of knowledge of the transportation company, we can suggest the following: the organization is planning knowledge at a good level. However, the knowledge flow from the operational level to the strategic level is as not available as it is in other fields, and it should increase the flow and implement new breakthroughs with the knowledge stored which it creates. Growth

plans that will be implemented in this way will affect customer satisfaction to a much greater extent positively.

5. Evaluation of knowledge management strategies: The criteria 8,9,13,14,15,16,17,18,19, 20,22 are relevant to the knowledge management strategies. As a result of this application, this module got 58.8% points. Employees have a habit of collecting and using knowledge. At the operational level, knowledge sharing strategies and policies are regularly carried out. This has produced the strategies and policies necessary to transform intellectual capital into product and benefit. However, knowledge sharing at this level remains at this level and is not transferred to the tactical and strategic level. At the strategic level, it does not take care of the rights of the patent such as the right of the patent for newly offered services. Risks are assessed in strategic planning work for organizational emergency management. The effects of alternative risk scenarios are assessed. But there are no measures against large risk groups such as natural disasters and extraordinary bad weather conditions. Regarding knowledge management strategies of the transportation company, we can suggest the following: the company should record all kinds of knowledge produced at the operational level in an easily accessible way, make them independent from individuals, provide knowledge flow from top to bottom. Systems should be developed to enable communication with the existing strategic and tactical level of operational level within the organization and enable the flow of knowledge from up to down. Knowledge management strategies should be widely used in this field. For higher levels that do not have operational level knowledge, the areas to be leveraged should be identified and implemented. Risk groups should be established and risk prevention plans for the groups should be realized. In order not to be affected by the effects of large risk groups, it is necessary to work specifically to prevent the risks in this group.

6. Evaluation of Knowledge Organization: The knowledge organization is concerned with criteria 6,9,12,15,16,17,18,19. As a result of this application, this module got 60.1% points. So the concept of organization based on knowledge is widespread at the rate of 60.1%. The use of knowledge-based management tools is at a strategic and tactical level. There is total quality management within the organization. The importance of knowledge organization is emphasized with the compulsory structuring of integrated knowledge systems, process management and so on. It performs the activities to protect intellectual capital at the best possible tactical level. The duties and responsibilities of the department of corporate business have been determined, the necessary duties and responsibilities have been determined for the maintenance and control of the knowledge and databases. At the operational level, knowledge organization is seen at very low rates. Knowledge workers are not organized outside the organization, data collection systems are not established, and the employees are not trained in using knowledge tools. The knowledge organization has not become a successful organization because it can not be achieved at the operational level although it is provided at strategic and tactical level. For the transportation company, we may suggest the following regarding to knowledge organization: integrated knowledge management studies should be done and a model should be applied. The organization should train employees at operational level to use knowledge management tools, be encouraged to make their own decisions, and involve participation in efficiency efforts. Knowledge management organization should be formed covering the entire organization.

7. Evaluation of knowledge culture: The knowledge culture is concerned with criteria 3,7,9,13,14,15,16,17,18,19,22. As a result of this application, this module got 65.25% points. In other words, the knowledge culture of the firm is 65.25%. New thoughts are rewarded with common problem solving activities between the units. No importance is given to knowledge development, and solution-focused activities such as brainstorming, are not used at the operational level. There is no question of developing new methods and methods at tactical level. There is no enterprise-integrated database. There is a quality circle within the organization and it is important for the integration of these 3 levels. The company has created its vision and mission. Determining organizational objectives is largely provided by strategic level managers. It is seen that the performance of the units improves. This is realized when the managers share their works' results periodically with the employees. At the operational level, these improvements are not as high as at the tactical level. For the transportation company, we can suggest the following regarding the knowledge culture: the company should provide incentives not only to reward innovation but also to encourage innovation. For this, in-house training should be increased first and knowledge leverage should be applied at the operational level. Senior managers should attach more importance to exchanging knowledge with subordinate employees. This situation will increase the quality of the institution. All employees can participate in brain storms related to knowledge and intellectual capital. More effective access to knowledge bases at the operational level, teamwork and problem solving methods can be created.

8. Evaluation of knowledge leverage: The knowledge leverage is related to criteria 4,13,14,15,16,17,18,19,20. As a result of this application, this module got 59.7% points. This means that the company is working to increase the knowledge of its employees and customers by 59.7%. There is almost no time and no budget allocated to R&D work at the company, indicating that they are not in a position to produce innovations. On the other hand, knowledge transfer is more common but this ratio is not enough. Innovations are often driven by followers rather than competitors in the market. The opinions of company employees are supported but there are deficiencies in implementation. Operational level workers avoid making innovation. In the company, the leverage is done at the tactical level. At the operational level, leverage is realized at a moderate level. It is not easy for the organization to adapt to emergencies. Employees are not informed about emergencies and risks. As for knowledge leveraging of the transportation company, we can suggest the following: sectoral developments should be closely monitored. The company should support the innovation works in technology. Should place importance on the R&D field and rise to a competitive and leading position. Operational level workers should be encouraged to innovate and sub-structures should be established for these innovations. Managers should only communicate through tactical level changes to operational level and knowledge leverage should be realized for this level. This will open up the operational level to innovation and development. Knowledge transferred from competitors should be applied with maximum efficiency. It needs to strengthen its infrastructure to evaluate emerging ideas. They need to transform R&D work into service and technology faster in which areas should they choose to leverage. The benefit of the leverage to the organization should not be overlooked. The quality circle based on customer requests should be developed by leveraging customer knowledge.

9. Evaluation of knowledge management applications: Concerning the evaluation of knowledge management practices, 15,16,17,18,19 are relevant. This module has a score of 50.3% in practice.

This means that the company can evaluate 50.3% of the applications it has made. The company is presenting brainstorming presentations and meetings to tackle and troubleshoot issues. Evaluation of in-house applications is not considered at operational level. With respect to knowledge management practices of the transportation company, we may suggest: knowledge management assessments should be spread across all areas, and operational management at the operational level should be more rigorous. The solution of this level of problems should be evaluated only at the operational level rather than at the tactical level. Problem solving ideas should be rewarded equally for all levels.

Conclusions

The EKMM has correctly classified and stored the knowledge with the correct channels. This situation has made it possible for the company to reach the most important source of knowledge. The study has explained the company that it must protect intellectual capital and use knowledge technology and infrastructure at the operational level better however, the prospect of leveraging knowledge has been adopted throughout the company. After the implementation, the flow of knowledge within the company has been carried out more transparent and intensive.

References

- [1] A. H. Topdemir, «Felsefe nedir? Bilgi nedir.,» Türk Kütüphaneciliği, 2009.
- [2] A. H. Topdemir, «Felsefe,» Pegem, Ankara, 2008.
- [3] N. Ö. Uçak, «Bilgi:Çok Yüzlü Bir Kavram,» *Türk Kütüphaneciliği*, pp. 705-722, 2010.
- [4] T. S. Kuhn, «The structure of scientific revolutions,» University of Chicago Press, Chicago, 2012.
- [5] I. Nonaka ve H. Takeuchi, «The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation,» Oxford University Press, New York, 1995.
- [6] T. Davenport ve L. Prusak, «Working Knowledge: How Organisations Manage What They Know,» <http://www.ubiquity.acm.org/article.cfm?id=348775>, 2000.
- [7] A. Carneiro, «How does knowledge management influence innovation and competitiveness?,» *Journal of Knowledge Management*, pp. 87-98., 2000.
- [8] T. Kucza, «Knowledge Management Process Model,» Technical Research Centre of Finland: VTT PUBLICATIONS, Finland, 2001.
- [9] W. Anothayanon, «Knowledge Management and Task Characteristics,» Unpublished Doctoral Dissertation. Minnesota: Applied Management and Decision Science, Walden University., Minnesota, 2006.

- [10] M. H. Zack, «Managing Codified Knowledge,» *Sloan Management Review*, pp. 45-58, 1999.
- [11] B. Dutta ve D. P. Madalli, «Trends in knowledge modelling and knowledge management: an editorial,» *Journal of Knowledge Management*, 2015.
- [12] R. O. Barclay ve P. C. Murray, «What Is Knowledge Management,» *Knowledge Praxis Knowledge Management Associates*, 1997.
- [13] E. F. Vail, «Knowledge Mapping: Getting Started With Knowledge Management,» *Information Systems Management*, pp. 16-23, 1999.
- [14] A. S. Bollenger ve R. D. Smith , «Managing Organizational Knowledge As A Strategic Asset,» *Journal Of Knowledge Management*,, p. 9, 2001.
- [15] G. B. Davis ve J. D. Naumann, «Personel Productivty With Information Technology,» Mcgraw Hill, USA, 1997.
- [16] B. Catherine ve M. Clarke, «How Do Managers Use Knowledge About Knowledge Management?,» *Journal Of Knowledge Management*, p. 237, 2000.
- [17] K. T. Beyene, C. S. Shi ve W. W. Wu, «THE IMPACT OF INNOVATION STRATEGY ON ORGANIZATIONAL LEARNING AND INNOVATION,» *South African Journal of Industrial Engineering*, pp. 125-135, 2016.
- [18] G. P. Huber, «Organizational learning: The contributing processes and the literatures.,» *Organization science*, pp. 88-115, 1991.
- [19] N. Shedroff ve R. S. Wurman , «An overview of understanding,» *In Information anxiety*, pp. 27-29, 2001.
- [20] İ. Barutçugil, «Bilgi Yönetimi,» Kariyer Yayıncılık, İstanbul, 2002.
- [21] G. Nalbant, «Bilgi Yönetimi Teorisinin Kavramsal Temelleri: Bir Uygulama,» %1 içinde *Marmara Üniversitesi Sosyal Bilimler Enstitüsü*, İstanbul, 2007.
- [22] D. Clark, «Understanding and performance,» <http://www.nwlink.com/~donclark/performance/understanding.html>, 2004.
- [23] S. Arslankaya, «kurumsal bilgi yönetimi modeli,» doktora tezi, Sakarya, 2007.
- [24] G. Petrash, «Managing Knowledge Assets for Value,» %1 içinde *Knowledge-Based Leadership Conference*, Boston, 1996.
- [25] A. S. Mccampbell, L. M. Clare ve S. H. Gitters, «Knowledge Management: The New Challenge For The 21st Century,» *Journal Of Knowledge Management*, pp. 172-179, 1999.

- [26] C. O'Dell, «A Current Review of Knowledge Management Best Practice.,» %1 içinde *Conference on Knowledge Management and the Transfer of Best Practices*, London, 1997.
- [27] A. Brooking, «Brook The Management of Intellectual Capital,» Range Planning, Long, 1997.
- [28] C. Bailey ve M. Clarke, «How do Managers Use Knowledge about Knowledge Management?,» *Journal of Knowledge Management*, pp. 235-243, 2000.
- [29] P. Smith, «A Performance Based Approach to Knowledge Management,» *Journal of Knowledge Management Practice*, 2002.
- [30] J. Darroch ve R. M. Naughton, «Beyond Market Orientation: Knowledge Management and the Innovativeness of New Zealand Firms,» *European Journal of Marketing*, pp. 572-593, 2003.
- [31] B. Safran, «Bilgi Yönetilebilir mi? Kavramsal Bir Yaklaşım,» *Türk Kütüphaneciliği*, 550-565, 2015.
- [32] A. S. Cui ve F. Wu, «Utilizing Customer Knowledge İn İnnovation: Antecedents And İmpact Of Customer İnvolveıment On New Product Performance,» *Journal Of The Academy Of Marketing Science*, pp. 516-538, 2016.
- [33] E. Öztemel ve S. Arslankaya, «Etkin Bilgi Yönetimi Kriterleri,» %1 içinde *YAEM Yöneylem Araştırması/Endüstri Mühendisliği Kongresi*, 2004.
- [34] E. Aksoy, «Bilgi Yönetimi ve Uygulama Adımları,» Yüksek Lisans Tezi Marmara Üniversitesi, İstanbul, 2001.
- [35] S. Top, *İşletmelerde Yenilik ve Yaratıcılık Yönetimi*, İstanbul: Beta Basım Yayın, 2008.
- [36] K. Dalkır, *Knowledge Management in Theory and Practice*, London: The MIT Press, 2011.
- [37] A. Tiwana, *Bilginin Yönetimi*, İstanbul: Dışbank Yayınları, 2003.
- [38] R. McAdam ve S. McCreedy, «A Critical Review of Knowledge Management Models,» *The Learning Organization*, pp. 91-100, 1999.
- [39] G. Lawton, «Knowledge Management: Ready for Prime Time?,» *IEEE Computer*, pp. 12-14, 2001.
- [40] K. Mertins, P. Heising ve J. Vorbeck, «Knowledge Management: Concepts and Best Practice,» *Springer*, pp. 5-6, 2005.