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KNOWLEDGE MANAGEMENT PRACTICES IN TURKISH SMES: A DESCRIPTIVE STUDY

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ABSTRACT

Recently, Knowledge Management (KM) has gained incredible attention in business world because of the rising importance of knowledge as a competitive power and strategic resource. However, Small and Medium Size Enterprises (SMEs) have faced some challenges about the employment of Knowledge Management (KM) practices. The principal objective of this study is to explore the regarded challenges of Turkish SMEs to implement as well as their perceptions about KM. It is also aimed to determine KM infrastructure Turkish SMEs that is necessary for them. The findings of this research show that Turkish SMEs are aware of the impact of knowledge in their business performances. However, the majority of them do not still have KM program and have not completed KM infrastructure that is necessary to manage knowledge systematically and effectively.

Keywords: *Turkey, SMEs, Knowledge, Knowledge Management (KM)*

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INTRODUCTION

SMEs are one of the main forces in economic growth and job creation, not only in the developed economies, but also in the emerging economies (OECD, 2000a). In other words, they are the backbones of the developing economies as such Turkish economy. Presently, they are also the key source breeding ground for business ideas in knowledge economy. Knowledge is one of the critical driving forces for sustainable competitive advantage and business success in this new economy. Organizations need to develop knowledge management practices that address the knowledge needs of employees, knowledge renewal and technical features of knowledge systems (Sparrow et al., 2000). Knowledge management (KM) is the key component for knowledge

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economy of the 21st century. Its development process consists of systems, businesses and organizational development procedures. The majority of large organizations have already had knowledge management programs, systems or strategies. Although many SMEs have implemented knowledge management practices, they are not aware of KM. Because of their organizational, technical and financial problems, they do not have KM programs, systems or strategies. Moreover, KM in SMEs has not been systematically investigated (Wong, 2005). Since one of the most important problems of SMEs is insufficient knowledge in Turkey, they need to manage knowledge systematically. Therefore, the principal objectives of this study are to determine the issues as well as perceptions of Turkish SMEs to knowledge management and to investigate the knowledge management infrastructure of Turkish SMEs. It is also aimed to contribute the existing literature in which the majority of KM studies have been performed on large organizations and a systematical investigation on KM practices in SMEs has not taken in Turkey yet.

Small and Medium Size Enterprises (SMEs) in Turkey

In most of the OECD countries, 95% of the companies are SMEs and generate a substantial share of GDP. Moreover, they accommodate 60% to 70% employment and the major source of most new jobs in the developing countries (OECD, 2000a, 2000b). At the same time, according to TURKSTAT (2003), as of 2002 there are 1.720.598 enterprises in Turkey and 99.89% of these enterprises are SMEs which create 76.7% of employment (KOSGEB, 2006). As shown in Table 1, 94.94% of the SMEs in Turkey are micro enterprises that employ 1-9 personnel. The average size of Turkish SMEs is 3.68 employees (TURKSTAT, 2003). Despite the fact that there are no differences in terms of the number and employment rates of SMEs between Turkey and the EU Members, the added value of European SMEs is twice as much Turkish SMEs (KOSGEB, 2006). The main reasons for that gap seem to be Turkish SMEs' insufficiencies in the utilization of the know-how powers, the definition of the core competencies, the establishment of a strong capital base and the timely investment of the ICT tools. Especially, Turkish SMEs can not use the advantages of ICTs. In Turkey, most of the SMEs produce for national and local markets. Insufficient investment to ICTs hinders entering international markets and developing e-commerce applications (OECD, 2004). Moreover, one of the most important problems of Turkish SMEs is the insufficiency of knowledge assessment (Muftuoglu & Durukan, 2004; Iraz, 2005; Kucuk, 2005). SMEs which can not obtain knowledge on the right time, place and format come across with problems in decision making and implementation processes. In spite of the fact that the main problem of Turkish SMEs is insufficient knowledge, they do not still perceive and are not aware of it (Ozgen & Dogan, 1998).

As SMEs do not obtain efficient knowledge, they have problems to recognize, choose and connect to international markets.

Table 1: Size of Enterprises in Turkey

SMEs	Number of Employment	%
	0	1.38
	1-9	94.94
	10-49	3.09
	50-99	0.30
	100-150	0.10
	151-250	0.08
Total	1-250	99.89
Large Enterprises	251 +	0.11

Source: TURKSTAT, 2003.

Definition of Knowledge Management

Although there is not any consensus on what KM means yet, there are many definitions of the concept. Sveiby (1996) defines KM as "the art of creating value from intangible assets". American Productivity and Quality Center (APQC) has improved this definition and stated that KM is "an emerging set of strategies and approaches to create, safeguard and use knowledge assets (including people and information)" (Hasanali, 2002). These set of strategies and approaches allow knowledge to flow to the right people at the right time in order to create more value for organizations (Hasanali, 2002). In KM research reports of KPMG Consulting (1998:5, 1999:6) KM is defined as "a systematic and organized attempt to use knowledge within in organization to transform its ability to store and use knowledge to improve performance".

KM is a business process, defined as "the explicit and systematic management of vital knowledge – and its associated processes of creation, organization, diffusion, use and exploitation" by Skyrme (1999). This definition shows that crucial knowledge is managed clearly and systematically in organizations owing to KM. Furthermore, Gupta et al. (2000:17) supports that definition by stating that "KM is a process that helps organizations find, select, organize, disseminate, and transfer important information and expertise necessary for activities such as problem solving, dynamic learning, strategic planning and decision making".

According to aforementioned definitions, KM consists of finding and analyzing of right and necessary knowledge and then planning and controlling of operations by developing knowledge assets in order to

achieve organizational objectives. KM is not only about managing these knowledge assets but also about processes, including the development, preservation, usage and share of knowledge (Civi, 2000).

As seen in Table 2, the KM applications are generally grouped as transactional, analytical, asset management, process based, developmental and innovation/creation knowledge management within this process. Each of these groups has been called "element" and the sum of them is referred to as the "KM spectrum" (Binney, 2001:35).

Table 2: KM Applications Mapped to the Elements of the KM Spectrum

	Transactional	**Analytical**	**Asset Management**	**Process**	**Development**	**Innovation and Creation**
Knowledge Management Applications	•Case Based Reasoning (CBR) •Help Desk Applications •Customer Service Applications •Order Entry Applications •Service Agent Support Applications	•Data Warehousing •Data Mining •Business Intelligence Management •Information Systems •Decision Support Systems •Customer Relationship Management (CRM) •Competitive Intelligence	•Intellectual Property •Document Management •Knowledge Valuation •Knowledge Repositories •Content Management	•TQM •Benchmarking •Best Practices •Quality Management •Business Process (Re)Engineering •Process Improvement •Process Automation •Lessons Learned •Methodology •SEI/CMM, ISO9XXX, Six Sigma	•Skills Development •Staff Competencies •Learning •Teaching •Training	•Communication •Collaboration •Discussion Forums •Networking •Virtual Teams •Research and Development •Multi-disciplined Teams

Source: Adapted from Binney, 2001:35

Nowadays, the competition among companies tends to be knowledge based. Products and services become more and more valuable due to their knowledge components. Thus, knowledge is the most important resource to create sustainable competitive advantage for companies.

Many scholars and practitioners (Chase, 1997; Skyrme & Amidon, 1997a, 1997b; KPMG Consulting, 1998, 1999; Chong et al., 2000; Hackett, 2000; McAdam & Reid, 2000, 2001) have a consensus on the fact that companies have gained business benefits by KM applications. Such benefits, gained by implementing informal or formal KM plans or projects are presented in Table 3.

Table 3: Business Benefits by Knowledge Management

Reduced time-to-market	Sharing best practices
Improved employee skills	Increased flexibility to adapt and change
Increased market share	Reduced cost
Increased profit	Improved products
Improved productivity	Improved efficiency of people and operations
Better customer handling	
Quality improvement	Improved innovation
Cycle time reductions	Increased responsiveness to customers
Increased sales	Improved decision-making

As shown in Table 3, KM offers many benefits to companies. However, they come across some barriers or challenges during the implementation stage of KM. Hackett (2000) asserts that the biggest barrier for a successful KM implementation is the failure of understanding KM's importance. In KM research report prepared by KPMG Consulting (1998), the main reasons preventing companies to share knowledge were listed as the time constrains, insufficiency in using KM techniques and the misunderstanding of KM benefits. These reasons are followed by the lack of selecting the appropriate technology, commitment to KM from senior management, funding for KM initiatives; and organizational culture to encourage KM respectively.

Chase (1997) states that the issues covering the soft, hard and the other infrastructural areas are barriers to the development and the implementation of KM strategies. Soft issues are organizational culture; lack of ownership of the problem; lack of time; organizational structure; top management commitment; rewards/recognition; and emphasis on the individual rather than team respectively. While hard issues include the standardized processes such as the utilization of ICTs, other areas are non-standardized processes.

According to Chong (et al. 2000), the main barriers to the implementation of KM strategies are information overload; difficulties in motivating employee to share knowledge; level of technology used in the company; problems in identifying the KM-related roles and responsibilities of employees; inter-operability limitations of existing IT systems; lack of security of network systems and obsolete data. If companies overcome these obstacles and transform them into the opportunities to gain sustainable competitive advantage, they should harvest the benefits of KM.

Knowledge Management in Turkish SMEs

KM studies are generally performed in large organizations. Empirical studies in the literature are about the requirements and the implementations of KM practices in large organizations (Gibson, 2000;

Sparrow, 2000). Findings of such studies, more or less the same for both developed and developing countries, indicate that the majority of the large organizations are aware of KM's importance and implement KM programs, systems or strategies. For instance, approximately 76% of the 120 large organizations among the top 500 industrial companies in Turkey implement a KM program (Ipcioglu & Erdogan, 2005).

While a significant number of the KM studies focus on different aspects of KM practices in large establishments, issues about KM practices in SMEs have not been clearly investigated in the literature. Mcadam and Reid (2001), after comparing the perceptions of KM between SMEs and large organizations, proposed that KM partitions have been recognized on the basis of scientific and social elements by large organizations rather than SMEs. In the same study, SMEs are also found to be less advanced because of their mechanistic approaches to the knowledge and their limited resource allocations to invest in KM approaches and systems.

Nowadays, since knowledge is the most important strategic resource for the companies, SMEs need to establish KM practices in addition to the existing business practices. Indeed, although some of the SMEs apply KM practices, only a few executives of SMEs call these practices as KM. For example, Beijerse (2000) found 79 instruments used by SMEs to organize knowledge in practice after a research on 12 innovative SMEs from industrial and business service sector. Keskin and Kalkan (2002) investigated the KM practices of Turkish SMEs by deploying 20 knowledge instruments of Beijerse study in their research instrument. Their study reveals that the interested Turkish SMEs have some implementations related to the knowledge and the usage of some information technologies. However, there is no systematic and solid effort signaling the existence of KM process in those SMEs. On the other hand, Bektaş and Yılmaz (2004) propose in their study that owners and managers of SMEs attach special importance to the knowledge technology by defining it as the source of the new developments.

Salovärji et al. (2005) made a significant contribution to KM concept by examining the relationship between sustainable sales growth and KM activities in 108 Finnish SMEs. The results of this study highlight that the higher levels of KM maturity are correlated with long-term sustainable growth. However, this is not the causal relationship. KM awareness, activity and fast growth often appear in the same companies (Salovärji et al., 2005). Despite the fact that SMEs in this study are highly aware of KM, a few of them have been able to benefit in terms of growth from their KM activities. Salovärji et al. (2005) also found that the fast-growing companies with high KM maturity were applying KM related activities in a comprehensive and balanced way.

Since SMEs are the key sources of employment and represent 98.89% of Turkish economy, managing knowledge is very strategic issue for them. Because of the uncertainty and severe crisis periods in the

history of Turkish economy, there is a serious need to KM practices in Turkish SMEs. However, experiences and activities of large organizations related to KM could not be implemented in SMEs because they are not simple applications. First, SMEs should be aware of KM and then they should establish infrastructure of KM. Ipcioglu and Celik (2005) studied the general attitudes of SMEs toward KM in 31 Turkish SMEs and concluded that SMEs were aware of the importance of KM, but they had not completed an important part of KM infrastructure. In a recent study, Ipcioglu and Celik (2006) investigated 143 SMEs in the Marmara Region of Turkey, which is also known as the heart of Turkish manufacturing industries. The results of this study showed that the SMEs in that region have implemented important KM practices such as benchmarking/auditing current situation, sharing best practices, implementing groupware and ERP systems, and so on. However, there are challenges in these KM practices. Emphasis on individual rather than team and organizational culture are particularly the most important KM challenges. Furthermore, their organization's structures, failure to understand KM's importance, insufficient financial resources, unnecessary KM programs and insufficient technological infrastructure are major barriers to the development of KM programs.

METHODOLOGY

The data for this study have been collected by utilizing a questionnaire. All the items in the questionnaire were adopted from the validated measurement tools which had been used in Skyrme and Amidon (1997a), Chase (1997), Chong et al. (2000) and KPMG Consulting (1998, 1999) studies. The purpose of the data collection was to find out how Turkish SMEs perceive KM and what their existing KM practices are. Therefore, the questionnaire included the following questions concerning interest and familiarity with KM:

- Existence of Knowledge Systems and Technology Department,
- Relationship between knowledge and performance,
- Importance of knowledge types to organization success,
- The Costs to Organizations due to the Best Knowledge not Being Accessible at the Right Time/Format/Place,
- Status of Organizations' KM Programs,
- Reasons of Lack of the KM Programs,
- KM Drivers,
- Benefits to Organizations from Effectively Managing Knowledge,
- Barriers to Manage Knowledge Effectively,
- Knowledge Management Practices,
- Knowledge Management Technologies

In the scope of the data collection process, the questionnaire was sent to 250 SMEs operating in manufacturing industry and established in

Marmara Region, the biggest industrial base in Turkey. A total number of 177 SMEs were responded and the return rate came about approximately 71%. Two-thirds of these SMEs responding the questionnaire have between 1 and 49 employees.

Survey Findings

Existence of knowledge systems and technology department. Figure 1 shows that 62% of the studied SMEs have not established any separate knowledge systems and technology department to store and organize knowledge yet. If knowledge has not been captured, stored and organized, managers do not obtain their necessity knowledge for decision making at right time, place and the format. Many Turkish SMEs do not have formal organizational structure and professional management. On the other hand, they have not divided departments in their organizations and owners and managers of companies are mostly the same persons. Moreover, they have not completed their institutionalization yet.

Figure 1: Department of Knowledge Systems and Technology

Relationship between knowledge and performance. Respondents were asked to rate the impact of knowledge in their business performance on a scale from very ineffective to very effective. As shown in Table 4, knowledge impact in business performance was reported by a majority of respondents (87%) as either "very effective" or "effective". Knowledge is acknowledged as a significant factor in their success since performance shows achievements of an organization. Despite the fact that the majority of the respondents are aware of knowledge impact in business performance, they do not have any knowledge systems and technology department because of the difficulty of obtaining finance, accessing to credit and building equity in Turkey.

Table 4: Knowledge Impact in Business Performance

Knowledge Impact	Frequency	%
very ineffective	2	1,1
ineffective	2	1,1
neither effective nor ineffective	19	10,7
effective	87	49,2
very effective	65	36,7
Missing	2	1,1
Total	177	100
Mean 4,20, Std. Deviation 0,77		

Importance of knowledge types to organization success. Figure 2 shows the types of knowledge rates by the respondents as important to very important to organizational success. Knowledge about products is the most important one for the 90% of the respondents, followed by the organization's competencies (87%), market trends (84%) and the organization's customers (83%). Knowledge about process and competition were ranked at the bottom with 75% and 74% ratings, respectively. Although knowledge about customers follow organization's products, competencies and market trends as important and very important, actually they were rated by 55% of the respondents only as very important. This rate is more than the other knowledge with the exception of products as very important. Since all of the respondents are from the manufacturing companies, knowledge about products has a higher ranked category among the other knowledge categories.

The Cost of the knowledge which is not accessible at the right time/format/place. Since managers have to take right decision to their organizational success, they need the existing knowledge being accessible at the right time, right format and the right place. As seen in Figure 3, the research participants found the availability of the valuable knowledge for decision making at right time, place and the format highly important. Additionally, the majority of the organizations have become aware of the costs associated with failing to manage knowledge.

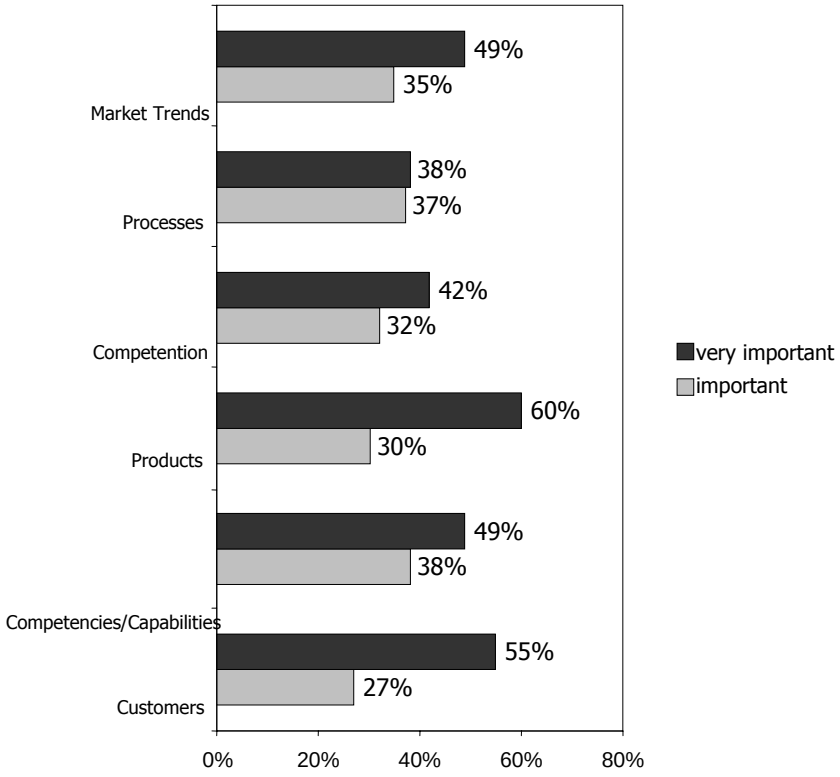

Figure 2: Knowledge Rated as Important and Very Important

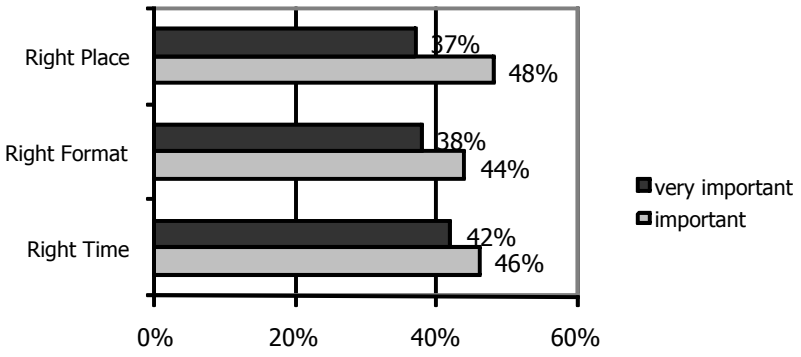

Figure 3: Ranking of Costs due to Insufficient Knowledge

Status of organizations' KM programs. Respondents were asked to specify the extent of their organization's KM program. A quarter of respondents (26%) had a KM program in a place. 13% were currently setting up a KM program and 32% were examining the need for such a program (see Figure 4). Only 29% of respondents had no program or were not considering one. Two-thirds of respondents have initiatives relevant to setting up, examining and implementing of a KM program. These results show that the majority of organizations have attached importance to KM.

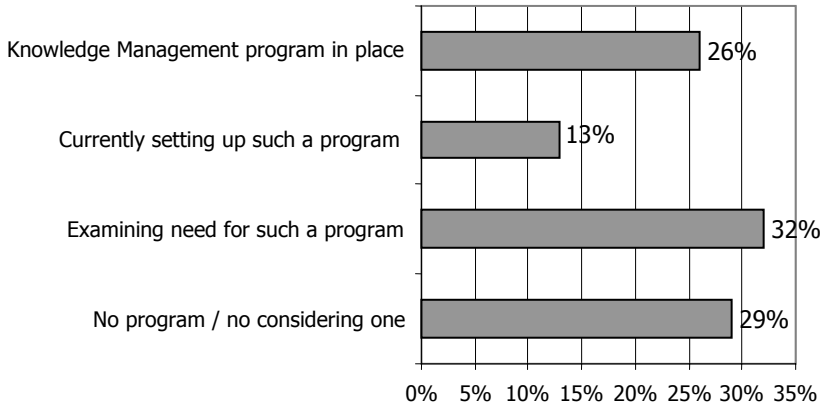

Figure 4: KM Program

Reasons of the KM program's absence. The research participants without an established KM program or a current preparation to set up it in their organizations (108), underlined the important reasons of such program's absence as the insufficient organizational infrastructure and failure to understand KM's importance respectfully (see Figure 5). 61% of the respondents reported that their organization's structure (31%) and failure to understand KM's importance (30%) hindered the development of KM program. Insufficient financial sources (26%) and the negative perceptions of KM program's necessity (26%) were cited by 52% of the respondents as major reasons to influence the KM program's existence. The other reason which 22% of the respondents found as a barrier to have KM program was insufficient technological infrastructure. These results indicate that the major reasons for inexistence of KM program in organizations (SMEs) are their underestimating KM's importance, perceiving KM's unnecessary and having insufficient organizational, technological and financial resources.

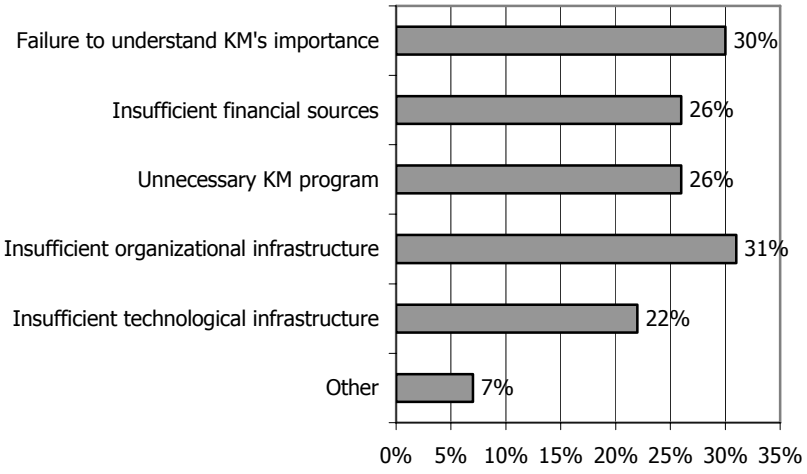

Figure 5: Reasons of lack of the KM program

KM drivers. Organization could encounter difficulties in creating knowledge-based working environments and cultures because of the blur definitions of the personal responsibilities and expected efforts, which, in turn, affects the organizational encouragement and support the effective KM implementations. Thus, respondents were asked to specify the level in the organization from which the greatest support for effective KM initiatives was coming and how this support leads those initiatives. As seen in Table 5, the respondents stated that senior management and middle management respectfully were exhibiting very good performance to manage knowledge effectively. This indicates that top and middle managers of SMEs understand the significance of KM and are driving their organization's KM initiative.

Benefits to organizations from effectively managing knowledge. Respondents stated many benefits from effectively managing knowledge to their organizations (see Figure 6). Six key benefits were listened by over 60% of respondents:

1. Quality improvement (67%).
2. Increased sales (63%).
3. Improved products (63%).
4. Reduced costs (61%).
5. Improvement in decision-making (61%).
6. Improvement in productivity (60%).

The respondents mainly expected that managing knowledge effectively would provide organizational benefits by increasing responsiveness to customers (58%); increasing profit (57%); and

increasing market share (51%). Other factors such as increased flexibility to adapt and change (47%), improved innovation (47%), better customer handling (42%), improved employee skills (38%), improved efficiency of people and operations (37%), sharing best practices (35%), reduced time-to-market (33%) and cycle time reductions (29%) were behind the factors in the first group.

Table 5: Efforts to Effective KM

	Senior Management		**Middle Management**		**Lower Management**		**Grass roots/ employees**	
Mean	4,07		3,73		3,25		2,98	
Standard Deviation	1,03		1,06		1,23		1,38	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Very poor effort	7	4	9	5,1	18	10,2	34	19,2
Poor effort	7	4	11	6,2	23	13	23	13
Neither good effort nor poor effort (no effort)	18	10,2	31	17,5	40	22,6	38	21,5
Good effort	66	37,3	73	41,2	50	28,2	36	20,3
Very good effort	64	36,2	36	20,3	24	13,6	26	14,7
Missing	15	8,5	17	9,6	22	12,4	20	11,3
Total	177	100	177	100	177	100	177	100

Barriers to manage knowledge effectively. Organizational culture was cited as the biggest obstacle among the other twelve obstacles to manage knowledge effectively by 39% of the respondents. It was followed by the given emphasis on individual rather than team in the organizations. Organizational structure and non-standardized processes were cited by 31% and 30% of the respondents as third and fourth obstacle to manage knowledge effectively. 27% of the respondents underlined that the insufficient utilization of ICTs was the important barrier for the effective KM. As seen in Figure 7, the respondents reported incentive systems (25%), lack of ownership of the problem (24%), lack of shared understanding of strategy (23%), physical layout of work spaces (20%), top management's failure to signal its importance (18%), lack of time (18%) and staff turnover (17%) as other barriers.

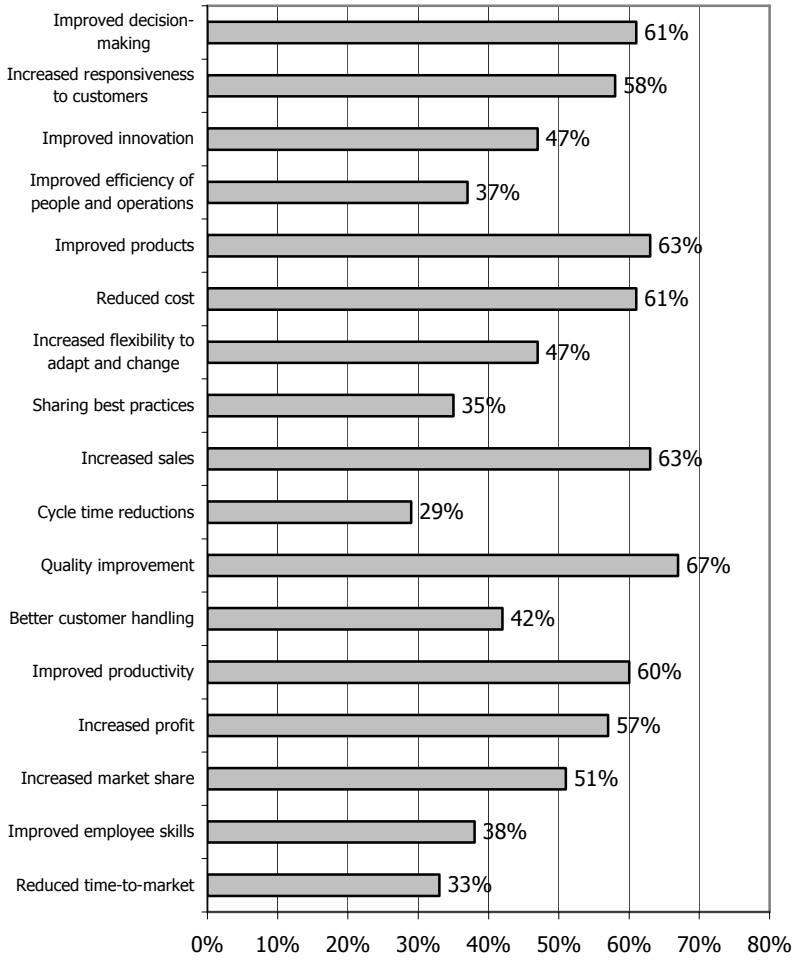

Figure 6: Benefits of Effective Managing of Knowledge

Knowledge management practices. Respondents were asked what knowledge management practices listed in Figure 8 were currently adopted. Heading the list was benchmark/audit current situation (58%), sharing best practices (42%), implementing groupware (33%) and ERP systems (30%). More than 20% of the respondent SMEs stated that their KM practices are creating an Intranet, data warehousing/knowledge repositories, knowledge systems audit/assessment and KM training/awareness. Other practices include create KM strategy, establishing new knowledge roles, measure intellectual capital, established formal KM networks, incentives and rewards for knowledge

working, knowledge policies, design KM process, create knowledge map, and appoint knowledge officers/knowledge centers.

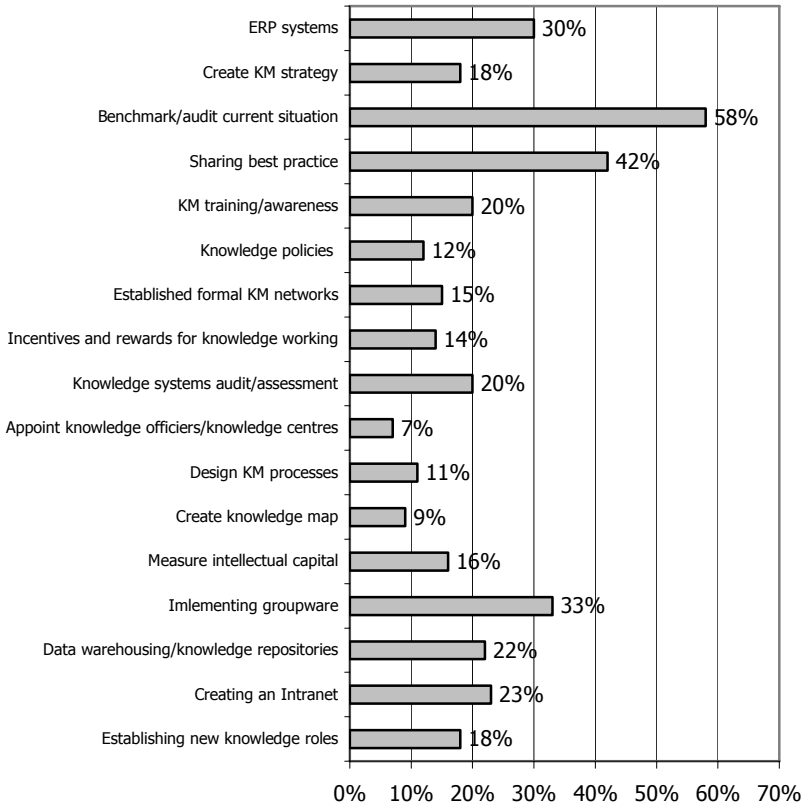

Figure 7: Barriers to Effective Managing of Knowledge

Knowledge management technologies. Respondents were asked about their use of technology to manage knowledge. Figure 9 shows types of technologies which are implemented for KM. Despite the fact that the use of Internet is cited as the most popular technology, it is not used by all response SMEs. 88% had implemented Internet access, 44% had groupware, 23% used data warehousing and mining techniques, 23% had document management systems, and 15% had an intranet. Other technologies such as extranet, decision support systems and artificial intelligence were used by only a few SMEs (less than 10% of them).

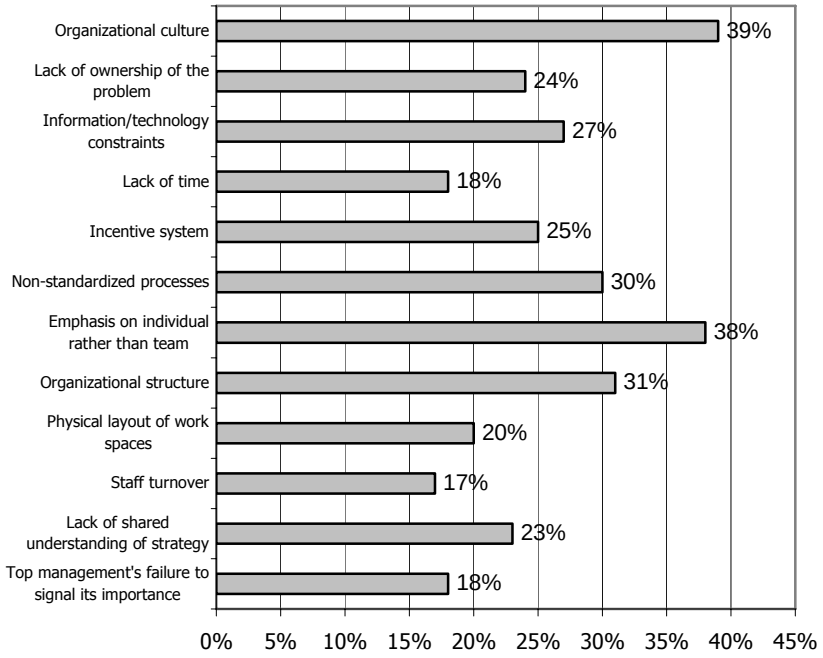

Figure 8: Current Knowledge Management Practices

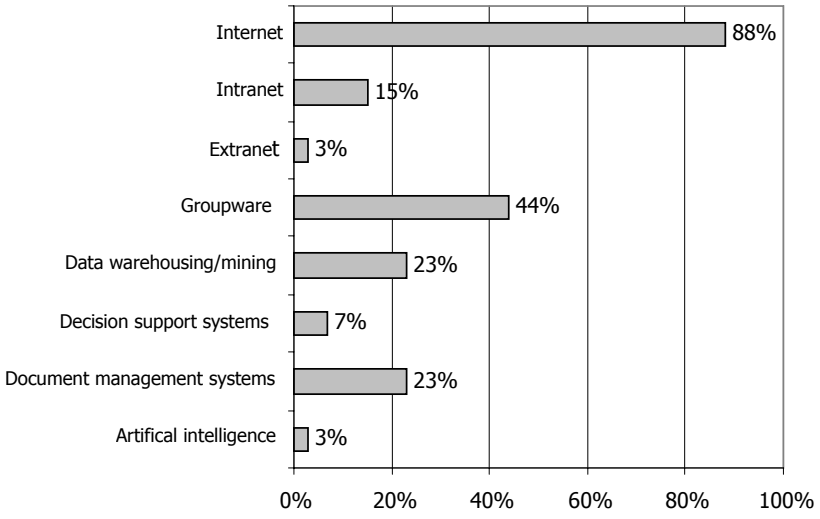

Figure 9: Knowledge Management Technologies

CONCLUSION

Approximately two-thirds of the participating SMEs do not have any established or separate department of Computer Systems and Technology performing the basic tasks such as keeping and storing the knowledge. On the other hand, they perceive the existence of such a department as a great deal of their business performance showing that they are aware of the importance of the knowledge for their business successes. Since these organizations are in manufacturing industry, knowledge about products are highly important for them, followed by knowledge about organization's competencies, market trends and customers respectfully. It is an important fact that if these SMEs fail to access knowledge at the right time, format and place, they will not take the right and fast decision. Timely decision-making highly affects the business success and reduces the operation costs. Although the participating SMEs seem to be very considered about their cost structures, the findings of this study indicated that they could not comprehend the effects of the availability of timely and appropriate knowledge on the cost reduction. Therefore, the majority of the participant SMEs' operating costs are very high.

One-forth of respondent SMEs have just had both a KM program in their work places. The most important reasons preventing SMEs to have a KM program are insufficient organizational infrastructure and failure to understand its importance. The other reasons are their negative perceptions about its necessity for their business and their structural problems such as financial or technical ones. The majority of senior management has supported the effective KM. It indicates that they accept the effective KM implementations as an important tool to improve product quality, decision-making process, work productivity, sales volume and cost control efforts. Thus, senior management should disseminate the responsibilities about establishing an effective KM implementation through the organizational levels. Nevertheless, the lack of appropriate organizational cultures, given importance on the individualistic efforts rather than team work, improper organizational structures and non-standardized operating processes are the main barriers to manage knowledge effectively. Internet, benchmarking/auditing the current situation, groupware, sharing best practices, ERP systems, data ware housing/mining and document management systems are leading the KM practices and technologies of respondent SMEs. However, internet usage among the participant is still very limited.

It is a well known fact that the knowledge is a great power. If companies manage it effectively, they could acquire sustainable competitive advantage. On the other hand, they have to manage knowledge successfully to reach their goals. In this study, firms are aware of the impact of knowledge in their business performance. In addition to this, the majority of them do not still have KM program to

manage knowledge systematically. KM does not seem to be adopted easily by Turkish SMEs because it is a complex process, affected by leadership, organizational culture, people, process, technology and organizational structure variables. For obtaining, sharing, storing and using the knowledge, employees are supported and motivated by top management. Also, top management should create a KM strategy and establish an organizational culture that creates and shares the knowledge. Organizational culture should particularly be the trust culture encouraging people to share their knowledge together easily.

This research was carried out at 177 manufacturing SMEs in a developing country, Turkey. Consequently, its results are highly important because it is the first study performed in this country and it can provide the guide lines for further studies about KM implementations in Turkish SMEs. On the other hand, since the sample used in this study is considerably smaller than the other KM studies performed in developed countries, further studies in this field should be performed with large samples to gain a comprehensive point of view about KM practices in Turkey.

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