Middle Managers' Maturity of Knowledge Sharing: Investigation of Middle Managers Working at Medium- and Large-sized Enterprises

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Abstract: Nowadays knowledge is becoming an increasingly important factor of organizational competitiveness. The way it is shared within the organization is essential and central not only to the success of organizations but also among those who share it, since those who take part in the knowledge sharing process also benefit from it. Since middle managers have an important position within the organization and play a significant role in the knowledge sharing process, this paper focuses on the knowledge sharing of those middle managers who work at medium and large-sized enterprises in Hungary. A new method of how to measure middle managers' maturity of knowledge sharing is presented in this paper. Between 2007 and 2010 an empirical survey was conducted during which 400 middle managers working at medium- and large-sized enterprises in Hungary were investigated by a questionnaire. The answers of this survey have been analysed using Principal Component Analysis and four different principal components concerning the maturity of knowledge sharing have been identified. These four components are the availability among middle managers, the availability among the middle managers and their subordinates, the usefulness of knowledge among middle managers and the usefulness of knowledge among the middle managers and their subordinates.

Keywords: knowledge sharing, maturity, middle managers, Hungary

1. Introduction

Knowledge sharing is considered to be a fundamental means through which organizational competitive advantage can be reached (Jackson et al. 2006). The way knowledge is shared within the organization is essential and central not only to the success of the organization where it takes place but also among those who share it, since those who take part in the knowledge sharing process also benefit from it.

Middle managers play a key role in the knowledge sharing process. During the process of knowledge sharing middle managers' roles have to change from control to mentor and facilitate others. However they often resist the realization of such changes. After building their careers and lives around the hierarchical pathway that exists within the organization, the appearance of a non-hierarchical work flow which does not require management behaviours concerning command-and-control may threaten them (Pommier et al. 2000). The fact regarding poor knowledge sharing and resistance towards middle managers' knowledge sharing should not be neglected since it may cause serious damages within the organization.

2. Theoretical background

2.1 Middle managers

While in the 1970s Chandler (1977) emphasised that middle managers' jobs cover exclusively the supervision of the lower hierarchical levels, now a large body of literature discusses their role in other fields. In the last 30 years there has not been a universally accepted definition regarding the term middle manager. Bower (1986:297-298) emphasises that middle managers are the only ones within their organization "who are in a position to judge whether issues are being considered in the proper context". From another point of view Uyterhoeven (1989:136) argues that a middle manager is someone "who is responsible for a particular business unit at the intermediate level of the corporate hierarchy". Ireland (1992) provides a more concrete definition regarding middle managers and describes them as employees working between an organization's first-level and top-level managers. Furthermore their jobs contain the integration of "the intentions of top-level managers with the day-to-day operational realities experienced by first-level managers" (Ireland 1992:18). Regarding their

position in the organization Staehle and Schirmer (1992:70) emphasise that middle managers are "employees who have at least two hierarchical levels under them and all staff employees with responsibility for managing personnel".

According to Schlesinger and Oshry (1984) middle managers have to fulfil two major integrating tasks which are the investigation of top management and workforce, and their own integration across functional lines. Furthermore they believe that there is a connection between their commitments towards higher level of integration and the potential regarding the effectiveness of individuals and organizations (Schlesinger, Oshry 1984). Based on this Schlesinger and Oshry (1984) differentiated several possible integration levels containing the following categories: no integration, information sharing, assimilating information, joint planning and strategizing, mutual consultation, and power bloc.

The literature of middle managers contains several other tasks that the managers need to fulfil which are the followings:

- Balancing the demands and interests of those organizational members who are above and below them (Schlesinger, Oshry 1984);

- Becoming adept at the integration of "hard" technical skills and "soft" skills (Barnes et al. 2001);

- Possessing people skills since they have to work closely with other people within and outside the organization (Sayles 1993);

- Balancing short- and long-term business demands (Schlesinger, Oshry 1984);

- Being close enough to actual operations (Sayles 1993).

Previous studies investigating middle managers can be divided into two categories. One of them examined the middle manager - top manager relationship (Schilit 1987; Nonaka 1988; Dutton et al. 1997; Pappas, Flaherty 2003) while the others dealt with the middle manager - subordinate relation (Crouch, Yetton 1998; Xin, Pelled 2003; Glasø, Einarsen 2006). However in the following Figure by Kaplan (1984), in which the networks of managers are presented, it can be seen that middle managers are not only in vertical relationships with others but they are also in lateral relationships.
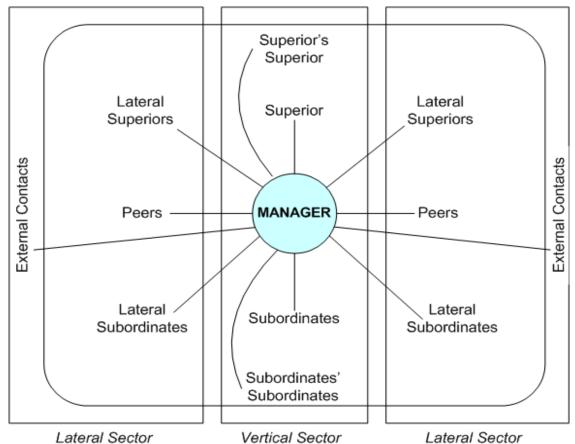

Figure 1: Sectors of manager's networks (Kaplan 1984:38)

A similar concept regarding the relationships of middle managers can be found in Uyterhoeven's (1989:137) statement as well, according to whom „the middle manager wears three hats in fulfilling the general management role" and these are being a superior, a subordinate and an equal. This is why they also have to manage relationships in several directions: upwards when they take orders; downwards when they give orders; and laterally when they relate to peers (Uyterhoeven 1989). Regarding our research it is important to highlight the fact that one of its novelties is that it focuses not only on the vertical but also on the lateral relationships of middle managers and investigates their roles and relationships in these directions.

Thus the main direction of our research includes these middle managers' downward vertical and the horizontal lateral relationships.

2.2 Knowledge sharing

Knowledge sharing represents the key knowledge management processes in organizations and is fundamental for generating new ideas and developing new business opportunities (Lin 2007). Huysman and de Wit (2002:23) also stress the significance of knowledge sharing while determining knowledge management, which according to them is „nothing other than managing knowledge sharing". Géró (2000) emphasises the significance of knowledge sharing besides other activities as well by mentioning that nowadays one of the biggest challenges includes the mapping, using and also the sharing of available knowledge. The reason why knowledge sharing within an organization is so important is defined by Dunford (2000:296) as follows ''much of the key knowledge is held by individuals unless there is some structure to retain it within the organizational memory''. Furthermore Rodriguez and Edwards (2010: 141) highlights the significance of improving knowledge sharing since it "develops capacities inside the organization". Finally, the goal of knowledge sharing according to Christensen (2007:37) "can either be to create new knowledge by differently combining existing knowledge or to become better at exploiting existing knowledge".

Regarding the definitions of knowledge sharing, it is mainly described as an activity during which information or other important contents are shared (Bartol, Srivastava 2002; Möller, Svahn 2004; Kocsis 2004; Li 2010). The approach of Bartol and Srivastava (2002) contains information as an element of knowledge sharing and defines it as the action in which relevant information are diffused by employees to others across the organization. Möller and Svahn (2004:220) emphasize that knowledge sharing is "sharing not only codified information, such as production and product specifications, delivery and logistics information, but also management beliefs, images, experiences, and contextualized practices such as business-process development". Kocsis (2004:41) defines knowledge sharing as "the activity of individuals following their self-interest". Li (2010:40) also defines knowledge sharing as an activity, but "in which participants are involved in the joint process of contributing, negotiating and utilizing knowledge".

After reviewing these definitions it can be seen that neither do they deal with middle managers and nor they investigate elements that are important regarding the knowledge sharing of middle managers. This has inspired us to create our own definition of knowledge sharing from the combination of the above mentioned ones. Thus our research defines knowledge sharing as a two-way process (giving and receiving knowledge) between the knowledge giver(s) and the knowledge receiver(s) who as participants of knowledge sharing exchange the knowledge found in their minds or the knowledge found in electronic or paper documents furthermore knowledge sharing can occur at the same time when the participants are present or at different times when they make their knowledge explicit.

2.3 Measurement of knowledge management maturity and knowledge sharing

According to Turner and Minonne (2010:167) "in many organisations there is no synchronised approach to measuring the effects of KM practices". For lack of the synchronised approaches to measure these effects in the following however we make an attempt to review the various measurements of knowledge management maturity and knowledge sharing to reveal those approaches that measure the management of knowledge in organizations.

2.3.1 Measurement of knowledge management maturity

The existing knowledge management maturity models can be categorized into two groups, depending on whether they are based on Software Engineering Institute's (SEI) Capability Maturity Model (CMM) or not. In the CMM, five levels of maturity are defined and each level is described by a unique set of characteristics. Besides, the technological aspect is more emphasised in these models. Examples of CMM-based knowledge management maturity models are Siemens' KMMM,Paulzen and Perc's (2002) Knowledge Process Quality Model. Non-CMM-based knowledge management maturity models contain examples of KPMG's (2000) Knowledge Journey, Klimko's (2001) KMMM, TATA Consultancy Services' 5iKM3 KMMM (Mohanty, Chand 2004), and WisdomSource's (2004) K3M. These models differ in the number of levels from CMM-based knowledge management maturity models. They describe steps of growth and if they are achieved by the organization then they can reach their knowledge management development (Khatibian et al. 2010).

The other two also known types of maturity models are the staged and the continuous maturity models. In staged maturity models the development of a single entity is described by a limited number of maturity levels (usually four to six levels), which are characterised by certain requirements (Paulk et al. 1993). These requirements have to be achieved by the entity in a strict order from the initial level to the final level (Paulk et al. 1993). During development the entity progresses from one level to the next and it cannot omit any level (Paulk et al. 1993). Regarding continuous maturity models the concept of 'progress area' is used, where maturity is interpreted in the context of processes and the organization can develop simultaneously in different process areas (Klimko 2001). An example of continuous maturity model is the 'Knowledge Management Profile' maturity model which does not require strict ordering either when the knowledge management elements are elaborated and implemented (Gaál et al. 2008). This model shows those areas of knowledge management practice that are outstanding at a given organization and those areas that are lagging behind (Gaál et al. 2011).

It can be seen that these models mainly evaluate the maturity levels of organizations and not individuals, thus they cannot be used in our research.

2.3.2 Measurement of knowledge sharing

The majority of studies have measured individual knowledge sharing from the point of view of willingness (or intention) of employees towards knowledge sharing or investigated self-reported knowledge sharing behaviours (Bock et al. 2005; Lin 2007; Jiacheng et al. 2010). In other studies knowledge sharing has been influenced by the organization (Yang, Chen 2007; Bosua, Scheepers 2007; Lin 2008) and thus the organizational perspective has been dominant in the research. While other research has been conducted from the behavioural perspective (Bock et al. 2005; Matzler et al. 2008; Chow, Chan 2008) and knowledge sharing has been influenced by individual behaviour.

Since the above mentioned research did not investigate middle managers and their knowledge sharing our research focuses on this field. Regarding middle managers' knowledge sharing we have considered and investigated the development level of middle managers' vertical and horizontal relationships. Analysing these relations draws attention to the fact that our research is not an investigation concerning middle managers' leadership function in which only middle manager-subordinate relationships are examined. Our research investigates the knowledge sharing function and focuses on how mature the function of knowledge sharing is. The development level of this knowledge sharing function is called maturity.

3. Empirical study

3.1 The purpose of the research and the research question

The purpose of our research has been to reveal those components that describe middle managers' maturity of knowledge sharing who work at medium- and large-sized enterprises in Hungary.

Regarding this purpose the following question has been needed to be answered:

Question: *With what kind of components can middle managers' maturity of knowledge sharing who work at medium-and large-sized enterprises in Hungary be described?*

The elements of middle managers' maturity of knowledge sharing have been defined and examined by the following categories: availability and the usefulness of knowledge.

Availability in our research is measured from the following standpoints:

- The investigated middle managers' availability to other middle managers working on the same organizational level when the investigated middle managers are asked for help,
- Other middle managers' availability working on the same organizational level to the investigated middle managers when the investigated middle managers ask for help;
- The investigated middle managers' availability to their subordinates when the investigated middle managers are asked for help;
- The availability of the investigated middle managers' subordinates to the investigated middle managers when the investigated middle managers ask for help.

The usefulness of knowledge is measured from the following standpoints in our research:

- The usefulness of the knowledge given by the investigated middle managers to other middle managers working on the same organizational level;
- The usefulness of the knowledge given by other middle managers working on the same organizational level to the investigated middle managers;
- The usefulness of the knowledge given by the investigated middle managers to their subordinates;
- The usefulness of the knowledge given by the investigated middle managers' subordinates to the investigated middle managers.

In order to answer the research question the following Hypothesis has been stated:

Hypothesis: *Middle managers' maturity of knowledge sharing who work at medium- and large-sized enterprises in Hungary can be characterised by the availability among middle managers, the availability among the middle managers and their subordinates, the usefulness of knowledge among the middle managers, and the usefulness of knowledge among the middle managers and their subordinates.*

The arrows in Figure 2 represent the elements that are examined regarding this Hypothesis.

Figure 2: Elements of maturity of knowledge sharing under investigation

3.2 Method chosen for testing the hypothesis

The initial assumption regarding the investigated middle managers' maturity of knowledge sharing was that it could be described by four elements. Furthermore these elements could retain as much of the information of the original variables as possible. Thus principal component analysis (PCA) was selected, since the requirements of retaining large amount of information of the original variables by four components could be tested and proved by the usage of PCA. Another reason of choosing this method was that the principal components were based upon the measured responses (DeCoster 1998). Furthermore as a result of PCA the number of principal components was also less then the number of variables, and this method reduced the number of variables as well (Myatt, Johnson 2009).

3.3 Data collection

The data collection was supported by Department of Management, University of Pannonia between 2007 and 2010. 4000 medium- and large-sized enterprises in Hungary was selected randomly from the average number of 5780 medium- and large-sized enterprises and questionnaires were sent to them by post and via e-mail.

The enterprises were asked to have the questionnaire filled in by at least one of their middle managers. The questionnaire of the survey comprised seven categories. One of them was Maturity of Knowledge Sharing which contained questions regarding the extent of availability and usefulness of knowledge based on a 5-point Likert scale. This paper focuses on this topic however other parts of the questionnaire were already published [for example competences found important for knowledge sharing (Szabó, Csepregi 2011)].

The participants of the research can be found in various working areas and industries the data of which are presented in Figure 3.
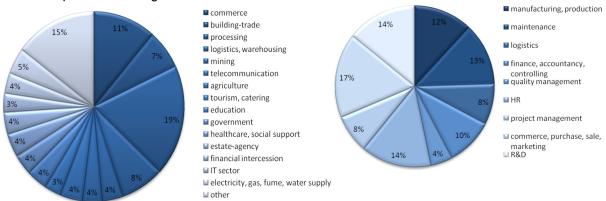

Figure 3: Distribution of participant of the survey according to industries and working areas

3.4 Results

In this part of the Empirical study the results using PCA will be presented.

3.4.1 Results of KMO and Bartlett's tests

To determine the appropriateness of the data set for PCA Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity is used. By using correlations and partial correlations for testing whether the variables used are adequate to correlate the KMO statistic is calculated, while Bartlett's test is used for revealing the relationship between the variables by testing the null hypothesis that the variables are uncorrelated in the population (Hinton et al 2004; Foster et al 2006; Székelyi, Barna 2002).

Although the values of KMO statistic can vary from 0 to 1, Kaiser (1974) recommended values greater than 0.5 to be accepted. If the significance value of Bartlett's test is less than 0.05, then this test is significant and thus the analysis is appropriate (Field 2005; Sajtos, Mitev 2007). The results of both tests can be found in Table 1.

Table 1: The KMO and Bartlett values of maturity of knowledge sharing

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.740
Bartlett's Test of Sphericity	Approx. Chi-Square	1105.361
	df	28
	Sig	.000

Table 1 shows that the KMO test with the value of 0.740 has been above the accepted limit of 0.5. In addition, the Bartlett test yields a high Chi-square value of 1105.361, and a significance level of 0.000 which is also under the accepted limit of 0.05. Thus both tests have verified that the data are appropriate for PCA.

3.4.2 Results of Total Variance Explained

The table of Total Variance Explained lists the eigenvalues associated with each component before extraction, after extraction and after rotation. In social science the total cumulative variance explained above 60 % is considered acceptable (Sajtos, Mitev 2007). Table 2 shows the result of Total Variance Explained.

Table 2: Total Variance Explained for maturity of knowledge sharing variables

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.460	43.252	43.252	3.460	43.252	43.252	1.687	21.085	21.085
2	1.331	16.633	59.885	1.331	16.633	59.885	1.632	20.395	41.481
3	.987	12.341	72.226	.987	12.341	72.226	1.595	19.943	61.424
4	.671	8.387	80.614	.671	8.387	80.614	1.535	19.190	80.614

Extraction Method: Principal Component Analysis

The PCA shows that the eigenvalues of the first three principal components have represented up to 61.424 % of the total variance (PC1 21.085%; PC2 20.395%; PC3 19.943%) of the observations. Thus three components would have fulfilled the requirements of exceeding the 60 % limit but it would have been difficult to interpret the components. The percentage of the cumulative eigenvalues has risen up to 80.614% when taking four components into account which thus on the one hand would have fulfilled the aim of our initial assumption on the number of components and on the other hand would have helped the interpretation of the final components. Therefore four components have been retained in the final analysis.

3.4.3 Results of rotated component matrix

Since the interpretation of the Component Matrix is rather difficult the rotation of the components has been needed. By using rotation the output of the PCA is more understandable and the interpretation of the component is much easier. Component loadings are correlation coefficients between the variables and the components and inform about the relationship of the variable and the component. If the variable has a loading value above 0.25 on the component and is loaded only on one component then that variable is considered to belong only to that component. Rotation has two major types: orthogonal rotation (Varimax, Equimax and Quartimax) and oblique rotation (Direct Oblimin, Promax) (Loehlin 1998; Székelyi, Barna 2002; Sajtos, Mitev 2007). Regarding the analysis the use of Varimax rotation method has been chosen, because it finds the angles that can maximize the variance of the squared loadings and it also splits the variables into disjoint sets and thus each variable has been associated with one of the components and this has simplified the interpretation. The results of Rotated Component Matrix can be seen in Table 4.

Table 4: Rotated component matrix of maturity of knowledge sharing

Rotated Component Matrix[a]				
	Component			
	1	2	3	4
Usefulness of other middle managers' knowledge to middle manager	.899	.101	.168	.105
Usefulness of middle manager's knowledge to other middle managers	.823	.018	.156	.274
Availability of subordinates to middle manager	.092	.858	.222	.127
Availability of middle manager to subordinates	.033	.854	.175	.213
Availability of other middle managers to middle manager	.238	.181	.858	.047
Availability of middle manager to other middle managers	.104	.240	.833	.222
Usefulness of middle manager's knowledge to subordinates	.094	.209	.124	.874
Usefulness of subordinates' knowledge to middle manager	.340	.146	.132	.756

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

The eight variables have been listed in Table 4 in the order of the size of their component loadings. For each variable the strongest (above 0.25) loadings are highlighted indicating which variables load most strongly on which component.

As the result of PCA four different components have been identified. Table 5 contains the principal components of maturity of knowledge sharing and the variables that are loaded on them.

Table 5: Components of maturity of knowledge sharing and the variables loaded on them

Name of the Component		Name of the Variable
1.	Availability among middle managers	other middle mangers' availability towards the investigated middle managers
		the investigated middle managers' availability towards other middle mangers
2.	Availability among the middle manager and subordinates	availability of the investigated middle mangers' subordinates towards the middle managers
		the investigated middle managers' availability towards their subordinates
3.	Usefulness of knowledge among middle managers	usefulness of other middle managers' knowledge to the investigated middle managers
		usefulness of the investigated middle managers' knowledge to other middle managers
4.	Usefulness of knowledge among the middle manager and subordinates	usefulness of knowledge of the investigated middle managers' subordinates to the investigated middle managers
		usefulness of the investigated middle managers' knowledge to their subordinates

The first component, the availability among middle managers, includes other middle mangers' availability towards the investigated middle managers and the investigated middle managers' availability towards other middle mangers.

The availability among the middle managers and their subordinates component contains the availability of the investigated middle mangers' subordinates towards the middle managers and the investigated middle managers' availability towards their subordinates.

The third component, usefulness of knowledge among middle managers, comprises the usefulness of other middle managers' knowledge to the investigated middle managers and also the usefulness of the investigated middle managers' knowledge to other middle managers.

The last component, usefulness of knowledge among the middle managers and their subordinates, consists of the usefulness of knowledge of the investigated middle managers' subordinates to the investigated middle managers and the usefulness of the investigated middle managers' knowledge to their subordinates.

Based on these results the following Thesis can be determined:

Thesis: *Middle managers' maturity of knowledge sharing who work at medium- and large-sized enterprises in Hungary is characterized by the availability among middle managers, the availability among the middle managers and their subordinates, the usefulness of knowledge among middle managers, and the usefulness of knowledge among the middle managers and their subordinates.*

3.4.4 Interpretation of the results

The maturity of knowledge sharing is examined by the indices of availability to one another and the usefulness of knowledge, which are presented in the followings.

Availability among Middle Managers: The higher the index of availability is the more the investigated middle managers are available to each other, the lower this index is the less the middle managers try to find time for each other. Accordingly the more time the middle manager is willing to find from his work time to help other middle managers, the more the knowledge of these middle managers will enlarge and the more it promotes the growth of the organizational knowledge base as well. Influencing factor for being available originates from the appreciation, understanding and identification with the organizational goals. Middle managers can be more open to be available to other middle managers if their goals and tasks are mutual or if their career depends on the knowledge sharing behaviour. The willingness to be available exposes the sign of cooperativeness within the organization which plays a significant role in these middle managers' availability to each other. Thus the more they are willing to co-operate, the more they will be available, the less they are willing to co-operate, the lower their availability will be. Those areas in the organization can also be revealed where middle managers rather compete than cooperate that should lead to the revision of personal differences and also the perception and understanding of goals of the given organization. The sign of competition can also draw attention to the "knowledge is power" attitude that can exist within the organization that is against the fulfilment of organizational goals or at least makes it harder to fulfil.

Availability among the Middle Managers and their Subordinates: The higher the index of availability is the more the investigated middle manager and his/her subordinates are available to each other, the lower this index is the less they are available for each other. Furthermore the more the middle manager is characterised by having a participative leadership style (Tannenbaum, Schmidt 1958, Hersey, Blanchard 1969) the more they are available to each other, thus the extent of availability shows the extent of participation as well. If the level of availability is higher between the middle manager and his/her subordinates, it results in better communication and the goals for the manager and his/her subordinates can be fulfilled together. By being available to each other the participants can get into win-win situation. Other pairing (win-lose, lose-lose, lose-win) can only lead to low level of availability, which raises the question whether the "knowledge is power" behaviour occurs again. This attitude can cause damage in the communication, and can undermine the fulfilment of organizational and operational goals. In addition problems may also appear if the organizational goals of the manager and the subordinates differ. The higher the power distance of a country is, the more the authority, power differences and status privileges are accepted in that country and the stronger the hierarchical power practices are, and the higher the organizational power distance is, the more the self-interest is dominant within the group (Carl et al. 2004). Thus these features result in a low level of availability among the middle manager and his/her subordinates. Hungary according to Bakacsi and Takács (1998) is characterized by higher power distance and as a result it is understandable that the availability between the middle manager and his/her subordinates is lower.

Usefulness of Knowledge among Middle Managers: The higher the index of usefulness of knowledge is, the more valuable the shared knowledge is for the middle managers, the lower this index is the less valuable this knowledge is for the middle managers. Co-operation also plays a significant role in the usefulness of knowledge since the more they are willing to co-operate, the more they will know what kind of knowledge is useful for the others, the less they are willing to co-operate the lower the usefulness of their knowledge will be. If common organizational knowledge, language and jargon emerge in the organization, it can foster the usefulness of knowledge. If middle managers are loyal to their organization they know what kind of knowledge is needed by other middle managers. However if they are not loyal, they will not put effort in sharing useful knowledge with others. When the level of usefulness of knowledge is low, not only the time and effort for sharing but also the intention and the knowledge of the transmitter are queried. The presence of competition leading to the failure of communication can also appear in case of low usefulness. On the other hand, the knowledge that is shared by one middle manager can be misleading since it can be found useful for the transmitter while it is less useful for the recipient(s). The difference in the knowledge base and the existing jargon

can result in knowledge that is less useful for others. By sharing the knowledge which is useful for other middle managers, not only the knowledge base of other middle managers will grow but also the knowledge base of the organization.

Usefulness of Knowledge among the Middle Managers and their Subordinates: The higher the index of usefulness of knowledge is, the more valuable the knowledge shared by the parties is for each other, the lower this index is, the less valuable the knowledge shared is. In this case the shared knowledge is in connection with day-to-day work. The low level of usefulness queries not only the competence of the person in that given scope of activities but also the intention of knowledge sharing. Besides the characteristics of the person can also have an affect on how his/her colleagues perceive the quality of the shared knowledge. Middle managers have mainly long term goals, while the subordinates have short term goals which may lead to less usefulness of knowledge for each other. Sharing a part of the needed knowledge can lead to the lack of fulfilment of the tasks. However the usefulness of knowledge probably can be improved by the use of coaching, mentoring, reporting or feedback.

4. Future plans

As a continuation of our research the following options could be taken into consideration:

- If our research is carried out among middle managers in a few years changes in the middle managers' maturity of knowledge sharing could be revealed;

- If managers or employees from other levels of the organization are also investigated then their maturity of knowledge sharing could be revealed, and their results could be compared with the recent results of middle managers;

- If our research is extended to other countries then the Hungarian results of our research could be compared with the results of other countries considering the national cultural differences as well;

- If other parts of the research questionnaire are examined in Hungary or are extended to other countries then the results could also be compared.

By carrying out the research in a few years time the recent results regarding middle managers' maturity of knowledge sharing could be compared with the "future" results. With this method a change process can be planed, managed and monitored.

Investigating employees or managers from other levels of the organization could reveal differences or similarities between these employees and the middle managers regarding maturity of knowledge sharing.

Research partners have been found in Bulgaria, Romania and Serbia with the help of whom our research has been extended. As a result of the extension of our research we will be able to compare these countries' results regarding maturity of knowledge sharing. Since these countries show similarities or differences regarding national culture, the results from these countries should also take into consideration the features and influences of national culture background as well (Heidrich 2002a, 2002b; Szabó et al. 2010).

The extended research includes all questions within the questionnaire of the research not only the questions connected to maturity of knowledge sharing, thus the questions and results connected to other parts of the questionnaire can also be compared.

5. Conclusion

This paper has presented the results of an empirical research conducted between 2007 and 2010 among 400 Hungarian medium- and large-sized enterprises. The paper has focused on the research methodology and the results of data analysis. Findings of the research have indicated that four principal components can be considered by middle managers during knowledge sharing. Two of them relate to availability. These are availability among middle managers and availability among the middle managers and their subordinates. The remaining two relate to usefulness of knowledge such as usefulness of knowledge among middle managers and usefulness of knowledge among the middle managers and their subordinates. Concerning availability it has been revealed by Kankanhalli et al. (2005) that knowledge sharing can appear as a result of reciprocation or simply as the enjoyment of helping others. Regarding usefulness of knowledge prior studies have shown that those who are confident in their ability regarding useful knowledge or have higher expertise are more likely to share

their knowledge and are engaged better in knowledge sharing (Cabrera et al. 2006, Constant et al. 1996; Lin 2007). Thus it has been suggested that it is important to increase individuals' confidence (Wang, Noe 2010).

References

Bakacsi, Gy. and Takács, S. (1998) "Honnan – Hová? A Nemzeti és Szervezeti Kultúra Változásai a Kilencvenes Évek Közepének Magyarországon", Vezetéstudomány. évf. 29, 2. sz, pp. 15-22

Barnes, J., Bessant, J., Dunne, N. and Morris, M. (2001) "Developing Manufacturing Competitiveness within South African Industry: The Role of Middle Management", Technovation. Vol 21, No 5, May, pp. 293-309

Bartol, K.M. and Srivastava, A. (2002) "Encouraging Knowledge Sharing: The Role of Organizational Reward Systems", Journal of Leadership and Organizational Studies, Vol 9, No 1, pp. 64-76

Bock, G.W., Zmud, R.W., Kim, Y.G. and Lee, J.N. (2005) "Behavioral Intention Formation in Knowledge Sharing: Examining the Roles of Extrinsic Motivators, Social-psychological Forces, and Organizational Climate", MIS Quarterly, Vol 29, No 1, pp. 87-111

Bosua, R. and Scheepers, R. (2007) "Towards a Model to Explain Knowledge Sharing in Complex Organizational Environments", Knowledge Management Research and Practice, Vol 5, No 2, pp. 93-109

Bower, J.L. (1986) Managing the Resource Allocation Process. Harvard Business School, Boston, pp. 297-298

Cabrera, A., Collins, W.C. and Salgado, J.F. (2006) "Determinants of Individual Engagement in Knowledge Sharing", International Journal of Human Resource Management, Vol 17, No 2, pp. 245-264

Carl, D., Gupta, V. and Javidan, M. (2004) Power Distance. In Hous, R.J., Hanges, P.J., Javidan, M., Dorfman, P.W., Gupta, V. (eds.) Culture, Leadership, and Organizations: the GLOBE Study of 62 Societies, pp. 513-564

Chandler, A.D. (1977) The Visible Hand: The Managerial Revolution in American Business. Harvard University Press, Cambridge, pp. 81-120

Christensen, P.H. (2007) "Knowledge Sharing: Moving Away from the Obsession with Best Practices", Journal of Knowledge Management, Vol 11, No 1, pp. 36-47

Chow, W.S. and Chan, L.S. (2008) "Social Network, Social Trust and Shared Goals in Organizational Knowledge Sharing", Information & Management, Vol 45, No 7, pp. 458-465

Constant, D., Sproull, L. and Kiesler, S. (1996) "The kindness of strangers: The usefulness of electronic weak ties for technical advice", Organization Science, Vol 7, No 2, pp. 119-135

Crouch, A. and Yetton, P. (1988) "Manager-Subordinate Dyads: Relationships among Task and Social Contact, Manager Friendliness and Subordinate Performance in Management Groups", Organizational Behavior and Human Decision Processes, Vol 41, No 1, pp. 65-82

DeCoster, J. (1998) "Overview of Factor Analysis", Retrieved from http://www.stat-help.com/factor.pdf

Dunford, R. (2000) "Key Challenges in the Search for the Effective Management of Knowledge in Management Consulting Firms", Journal of Knowledge Management, Vol 4, No 4, pp. 295-302

Dutton, J.E., Ashford, S.J., O'Neill, R.M., Hayes, E. and Wierba, E.E. (1997) "Reading the Wind: How Middle Managers Assess the Context for Selling Issues to Top Managers" Strategic Management Journal, Vol 18, No 5, pp. 407-425

Field, A. (2005) Discovering Statistics Using SPSS, Sage, London.

Foster, J., Barkus, E., and Yavorsky, C. (2006) Understanding and Using Advanced Statistics. Sage, London.

Gaál, Z., Szabó, L., Kovács, Z., Obermayer-Kovács, N. and Csepregi, A. (2008) "Knowledge Management Profile Maturity Model", in Proceedings of 9th European Conference on Knowledge Management (ECKM 2008), Southampton Solent University, Southampton, UK, 4-5 September 2008, pp. 209-216

Gaál, Z., Szabó, L., Obermayer-Kovács, N., Kovács, Z., and Csepregi, A. (2011) "Knowledge Management Profile – an innovative approach to map knowledge management practice, In Eardley, A., Uden, L. (eds.) Innovative Knowledge Management: Concepts for Organizational Creativity and Collaborative Design, IGI Global, pp. 253-263

Géró, K. (2000) "Knowledge Management – Múló Háború Avagy a Jövőnk?" Könyvtári Figyelő, évf. 46, 1-2 sz, pp. 104-112

Glasø, L. and Einarsen, S. (2006) "Experienced Affects in Leader–subordinate Relationships", Scandinavian Journal of Management, Vol 22, No 1, pp. 49-73

Heidrich, B. (2002a) "Business as Unusual: The Role of National Cultural Background in Corporate Life", KakanienRevisited. Theorie. pp. 1-8. Retrieved from http://www.kakanien.ac.at/beitr/theorie/BHeidrich1.pdf

Heidrich, B. (2002b) "Environmental and Organizational Factors of Mergers and Acquisitions: Acculturation as a Cultural Change Process", Club of Economics in Miskolc. Vol 1, pp. 9-14

Hersey, P. and Blanchard, K.H. (1969) Management of Organizational Behavior, Englewood Cliffs. NJ: Printice Hall, pp. 107-125

Hinton, P.R., Brownlow, C., McMurray, I., and Cozens, B. (2004) SPSS explained, Routledge, London.

Huysman, M. and de Wit, D. (2002) Knowledge Sharing in Practice. Information Science and Knowledge Management, Kluwer Academic Publishers, Boston.

Ireland, R. (1992) "Corporate Culture is Best Conveyed by Mid-level Managers", Baylor Business Review. Vol 10, No 1, Spring, pp. 18-19

Jackson, S.E., Chuang, C.H., Harden, E.E., Jiang, Y and Joseph, J.M. (2006) "Toward Developing Human Resource Management Systems for Knowledge-intensive Teamwork", Research in Personnel and Human Resources Management. Vol 25, pp. 27-70

Kaiser, H.F. (1974) "An Index of Factorial Simplicity", Psychometrica., Vol 39, pp. 31-36

Kankanhalli, A., Tan, B.C.Y. and Wei, K.K. (2005) "Contributing Knowledge to Electronic Knowledge Repositories: An Empirical Investigation", MIS Quarterly, Vol 29, No 1, pp. 113-143

Kaplan, R.E. (1984) "Trade Routes: The Manager's Network of Relationships", Organizational Dynamics, Vol 12, No 4, pp. 37-52

Khatibian, N., Hasan, T. and Jafari, H.A. (2010) "Measurement of Knowledge Management Maturity Level within Organizations", Business Strategy Series, Vol 11, No 1, pp. 54-70,

Klimko, G. (2001) "Knowledge Management and Maturity Models: Building Common Understanding", Proceedings of the 2nd European Conference on Knowledge Management, pp. 269-278

Kocsis, É. (2004) "A Tudásmegosztás Hatékonysága. Menedzseri Szemlélet Versus Gazdaság-elméleti Megközelítés", Társadalom és Gazdaság, évf 26, 1 sz, pp. 39-55

KPMG Hungary (2000) Knowledge Management in Hungary: Research, KPMG Consulting Report, Budapest

Kulkarni, U. and Freeze, R. (2004) "Development and Validation of a Knowledge Management Capability Assessment Model", Proceedings of the Twenty-Fifth International Conference on Information Systems, pp. 657-670.

Jiacheng, W., Lu, L. and Francesco, C.A. (2010) "A Cognitive Model of Intra-organizational Knowledge-sharing Motivations in the View of Cross-culture", International Journal of Information Management, Vol 30, No 3, pp. 220-230

Li, W. (2010) "Virtual Knowledge Sharing in a Cross-cultural Context", Journal of Knowledge Management, Vol 14, No 1, pp. 38-50

Lin, H.F. (2007) "Effects of Extrinsic and Intrinsic Motivation On Employee Knowledge Sharing Intentions", Journal of Information Science, Vol 33, No 2, pp. 135-149

Lin, W.B. (2008) "The Effect of Knowledge Sharing Model", Expert Systems with Applications, Vol 34, No 2, pp. 1508-1521

Loehlin, J.C. (1998) Latent Variable Models: An Introduction to Factor, Path, and Structural Analysis, Lawrence Erlbaum, NJ.

Matzler, K., Renzl, B., Müller, J., Herting, S. and Mooradian, T.A. (2008) "Personality Traits and Knowledge Sharing" Journal of Economic Psychology, Vol 29, No 3, pp. 301-313

Mohanty, S.K. and Chand, M. (2004) 5iKM3 Knowledge Management Maturity Model for Assessing and Harnessing the Organizational Ability to Manage Knowledge, TATA Consultancy Services, Retrieved from http://www.tcs.com/NAndI/default1.aspx?Cat_Id=154&DocType=324&docid=419

Möller, K. and Svahn, S. (2004) "Crossing East-West Boundaries: Knowledge Sharing in Intercultural Business Networks", Industrial Marketing Management, Vol 33, No 3, pp. 219-228

Myatt, G.J. and Johnson, W.P. (2009) "Making Sense of Data II: A Practical Guide to Data Visualization, Advanced Data Mining Methods, and Applications" Wiley-Blackwell.

Nonaka, I. (1988) "Towards Middle Up/Down Mangement: Accelerating Information Creation", Sloan Management Review, 29, Spring, pp. 9-18

Pappas, J.M., Flaherty, K.E. and Wooldridge, B. (2003) "Achieving Strategic Consensus in the Hospital Setting: A Middle Management Perspective", Hospital Topics, Vol 81, No 1, Winter, pp. 15-22

Paulzen, O. and Perc, P. (2002) "A Maturity Model for Quality Improvement in Knowledge Management, Enabling Organisations and Society through Information Systems", Proceedings of the 13th Australasian Conference on Information Systems, pp 243-253.

Paulk, M.C., Weber, C.V., Curtis, B. and Chrissis M.B. (1993) The Capability Maturity Model: Guidelines for Improving the Software Process, Mellon University, Software Engineering Institute, Reading, MA: Addison-Wesley.

Pommier, M., Shneier, L. and Denning, S. (2000) The Springboard: How Storytelling Ignites Action in Knowledge-Era Organizations, Butterworth Heinemann, London.

Rodriguez, E., and Edwards, J. (2010) "People, Technology, Processes and Risk Knowledge Sharing" Electronic Journal of Knowledge Management, Vol 8, No 1, pp 139-150

Sajtos, L. and Mitev, A. (2007) SPSS Kutatási és Adatelemzési Kézikönyv. Alinea Kiadó, Budapest.

Sayles, L.R. (1993) "Doing things Right: A New Imperative for Middle Managers", Organizational Dynamics, Vol 21, No 4, Spring, pp. 5-14

Schilit, W.K. (1987) "An Examination of the Influence of Middle-level Managers in Formulating and Implementing Strategic Decisions", Journal of Management Studies, Vol 24, No 3, pp. 271-293

Schlesinger, L.A. and Oshry, B. (1984) "Quality of Work Life and the Manager: Muddle in the Middle", Organizational Dynamics, Vol 13, No 1, pp. 5-19

Siemens (2004). Knowledge management maturity model (KMMM) Retrieved from http://www.kmmm.org/objects/KMMM_Flyer.pdf

Spicer, J. (2005) Making Sense of Multivariate Data Analysis, Sage, California.

Staehle, W. and Schirmer, F. (1992) "Lower-level and Middle-level Managers as the Recipients and Actors of Human Resource Management", International Studies of Management and Organization, Vol 22, No 1, pp. 67-89

Szabó, L., Kovács, Z., Csepregi, A., Antonova, A. and Jenei, E. (2010) "Is Knowledge Shared the Same Way? A Comparison of Three Central-Eastern European Countries' National Culture and Knowledge Sharing" In Conference Proceedings of the International Knowledge Management in Organizations Conference: Roles and Challenges of Knowledge Management in Innovation for Services and Products. 18th-19th May 2010, Veszprém, Hungary, pp. 21-30

Szabó, L., Csepregi, A. (2011) "Competences Found Important for Knowledge Sharing: Investigation of Middle Managers Working at Medium- and Large-sized Enterprises", The IUP Journal of Knowledge Management. Vol 9, No 3, July, pp. 41-58

Székelyi, M. and Barna, I. (2002) Túlélőkészlet az SPSS-hez: Többváltozós Elemzési Technikákról Társadalomkutatók Számára, Typotex, Budapest.

Tannenbaum, A.S. and Schmidt, W.H. (1958) "How to Choose a Leadership Pattern", Harvard Business Review. Vol 36, March/April, pp. 95-101

Turner, G. and Minonne, C. (2010) "Measuring the Effects of Knowledge Management Practices" Electronic Journal of Knowledge Management, Vol. 8, No 1, pp. 161-170

Uyterhoeven, H. (1989) "General Managers in the Middle", Harvard Business Review, Vol 67, No 5, pp. 136-145

Wang, S., Noe, R.A. (2010) "Knowledge sharing: A Review and Directions for Future Research", Human Resource Management Review, Vol 20, pp. 115-131

WisdomSource (2004) "K3M Knowledge Management Maturity Model", Wisdomsource News, Vol 2, No 1, Retrieved from http://www.wisdomsource.com/contentassets/K3M%20Overview.pdf

Xin, K.R. and Pelled, L.H. (2003) "Supervisor–subordinate Conflict and Perceptions of Leadership Behavior: A Field Study" The Leadership Quarterly, Vol 14, No 1, pp. 25-40

Yang, C. and Chen, L.C. (2007) "Can Organizational Knowledge Capabilities Affect Knowledge Sharing Behavior?" Journal of Information Science, Vol 33, No 1, pp. 95-109