Knowledge Management Practices in Large Companies

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ABSTRACT

Information and knowledge are essential resources for businesses to maintain their competitiveness and to constantly develop further. Knowledge Management (KM) enables companies to develop their activities by having the right information at the right time, as well as by offering the tools to manage the skills and knowledge of the personnel. The aim of this paper is to empirically analyze the status of Knowledge Management practices in large companies. The empirical study was carried out in spring 2014 as a web-based questionnaire survey, which was targeted to Finland's 50 biggest companies. Results of the study provide direction for the development of Knowledge Management practices in large companies.

KEYWORDS: Knowledge Management, practices, survey, large companies

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INTRODUCTION

Over the centuries, at the very least since Plato, who declared that “knowledge is justified true belief”, has the word “knowledge” evoked many feelings. Throughout history those people able to utilize knowledge the best have survived and succeeded. (Stewart, 1997) This is the case also for many modern organizations. Knowledge is typically the central resource and element for survival and the primary source of competitive advantage (Brooking, 1999; Fleisher and Bensoussan, 2002; Stewart, 1997; Teece, 2000). Globalization is one factor that has made competition between companies fiercer (Brooking, 1999; Fleisher and Bensoussan, 2002; Stewart, 1997; Teece, 2000). Especially the large companies operating in the global markets need to constantly find ways to stay competitive.

Although Knowledge Management (KM) has already received a great deal of attention among both academics and managers, for example when, Nonaka and Takeuchi (Nonaka and Takeuchi, 1995) provoked discussion about the importance of knowledge creation and both Grant (1996) and Spender (1996) presented the idea of a knowledge based view of the firm, it can still be considered a quite new research field and still in its fairly early development. Especially since the 1990s, knowledge-management research has grown dramatically, and several research disciplines have contributed to the development of it (for example Krogh von and Roos, 1995; Kukko et al., 2003; Lilleoere and Holme Hansen, 2011; Maier, 2002; Nonaka and Takeuchi, 1995; Sandhu et al., 2011; Spender, 1996; Ståhle and Grönroos, 1999). For example, management science, information science, organization science, sociology, and psychology have contributed to the development of the field (for example Maier, 2002). This has led to different viewpoints on Knowledge Management and also to rise of associated disputes.

The multidisciplinary approach of the field has also yielded a situation in which Knowledge Management can be seen as a quite comprehensive and many-sided phenomenon. Hence, much theory-based and empirical research has been done in the field and many studies have concentrated for example on development of the core concepts in this field (Alavi and Leidner, 2001; Bartol and Srivastava, 2002; Hansen, 1999; Huber, 1991; Maier, 2002; Nonaka and Takeuchi, 1995; Ståhle and Grönroos, 1999; van Burg et al., 2008; Wang and Noe, 2010). Despite all the multidisciplinary research on Knowledge Management, it can be argued that the field is not yet so well developed and much remains to be studied in the field of Knowledge Management especially empirically. Empirical knowledge-management studies are needed to develop concepts in the field to respond to the needs of both researchers and management practice and to develop the practices related to it. (Bouthillier

and Shearer, 2000; Foss et al., 2010; van Burg et al., 2008; Wang and Noe, 2010) This study meets this requirement as it explores empirically the practices of Knowledge Management in large companies and reflects how those meet the suggested theory-based concepts and practices. The empirical study is carried out among 50 largest companies in Finland. These companies mostly operate in international markets, even though their headquarters are located in Finland. The study is carried out as a quantitative survey and the empirical data is statistically analysed with SPSS program. The study examines the correlation of Knowledge Management practices and effectiveness as well as that of Knowledge Management practices and the objectives of Knowledge Management. A similar research was carried out by the research group also in year 2002, and thus also some comparative viewpoints on the development of Knowledge Management practices between years 2002 and 2014 are provided in the discussion section of this paper.

THEORETICAL INSIGHTS

There are characteristics of knowledge that distinguish it from other resources of a company. First of all, typically knowledge accumulates over time and use of it does not typically cause additional costs (Leonard-Barton, 1995; Shapiro and Varian, 1999). Use of knowledge does not deteriorate it; instead, through use knowledge evolves, and it is dynamic (Leonard-Barton, 1995; Nonaka et al., 2001; Prahalad and Hamel, 1990). It can also be hard to grasp (Krogh von and Roos, 1995). Therefore, solid knowledge resources of a company can separate it from its competitors in a manner that is hard for competitors to copy. Hence, knowledge can be said to be an essential source of genuine competitive advantage for a company. (Krogh and Roos, 1996)

To get the most out of knowledge it should be designed, acquired, developed, and utilized well (Nonaka and Takeuchi, 1995; Nordhaug, 1994). For this, there should be built physical, social, and resource-allocation structures that guarantee extensive and sytematic utilization of knowledge (Teece, 1998). However, definition, discovery, and use of knowledge are often found to be difficult (Ruohotie, 1996; Ståhle and Grönroos, 1999). Knowledge Management (see e.g. Grant 1996, Nonaka & Takeuchi 1995) can be argued to offer a set of principles and tools to support the work in the modern networked society (Valkokari & Helander 2007).

Knowledge Management (KM) has been defined varyingly in different contexts, but a rather unified definition of “the task of developing and exploiting an organization's tangible and intangible knowledge resources to create a potential of competitive advantages” (McCune

1999) is followed in this research. Basically it can be said that the main idea in Knowledge Management is the effective diffusion and promotion of the reuse of existing resources (Wah 2000) and managing the sharing and application of knowledge, as well as improving knowledge creation (Marchand & Davenport 2000). It is important for organizations to identify which kind of Knowledge Management strategies (Hansen et al. 1999, Seeley & Dietrick 1999, Zack 1999) they should apply to support the work of their personnel.

Knowledge Management can also serve usable viewpoints for organizations in the middle of a change process, as KM supports the communication process between the managers leading the change process and the employees involved in the situation (Helander et al. 2011). In fact, leadership carries immense weight in Knowledge Management (Helander et al. 2010). The 'people skills' of the management have an essential role in supporting the organizational work, especially in change situations, which are typical for the modern society and organizations. In general, management can also have a huge influence e.g. on the birth of potential knowledge sharing barriers within organizations (Kukko & Helander 2012, Kukko et al. 2008), which is commonly one remarkable issue that diminish the organizational work climate. More generally speaking we can identify also other kinds of barriers than just the knowledge sharing barriers that deteriorates the smoothness of the personnel's work and in the end, the productivity of the company. For example, according to Matson and Prusak (2010), the knowledge work barriers can be divided into different groups: physical, technical, social or cultural, contextual and temporal barriers. However, according to Ho (2009), the key factors that enable efficient utilization of knowledge and support work in the organizations are strategy and leadership, organizational culture, organizational incentive system and information technology.

QUANTITATIVE RESESARCH SETTING

The study was carried out as a quantitative survey. Usually, the quantitative methods will be used to form verifications for the generated theories, but in some cases also to generate these theories as well (Punch 2005). For theory verifications and generalizations, quantitative research generally employs survey designs (Creswell 2003), which has been utilized in this research too.

The data were collected by using an Internet-based questionnaire and the data was statistically analyzed with SPSS program. The research link was open since June until end of September 2014. The respondents´ industries were manufacturing and construction,

wholesale and retail trade and finance and services. The company representation was over 50 %, thus the response rate can be considered to be relatively good. Table 1.

Table 1. Corporation respondents by industry

Industry	Manufacturing and construction	Wholesale and retail trade	Finance and Services
N	18	6	10
% of n=100 % 5 % no industry named	50 %	17 %	28 %

The study examines the correlation of Knowledge Management practices and effectiveness as well as that of KM practices and the objectives of Knowledge Management. The purpose was to get outline of the concerned phenomenon in these companies. Also it was important to examine the common understanding the KM concept in practice and in the science field. In 2002 was made the research similar to this study, so it was possible to make comparison that what has changed during twelve years.

The data were analyzed with quantitative methods using SPSS-program. The analysis methods were limited because of low response. Frequencies were used to examine distribution of responses, and were made sum variables. The reliability analysis was made with Cronbach´s Alpha ($\alpha>0.6$). For factor extraction was used Principal Component Analysis, and the criterion used of factor was minimum Eigenvalue > 1, KMO and Bartlett's test Varimax method ≥ 0.6, p = 0,000.

RESULTS

The study views Knowledge Management practices, functions and also how it was organized. The challenges and need of development are demonstrated with figures. In the end of the article the comparison of year 2002 and this study results are discussed.

Systematics

In questions concerning systematics of Knowledge Management there was evaluated organizational infrastructure and strategic capability in decision making, strategy work, feedback systems, confidence, and knowledge sharing and technology utilization.

Table 2. exhibits KM system view with level 1 to 5, how the responds saw that the issue actualized in their company. The systematic in these organizations was in rather good level. Free communication and team work were the strongest agents what comes to KM systematic. Organizational infrastructure support wasn´t good enough in 14 % responses.

Table 2. Rotated Component Matrix (Sum variable) for KM System View (%, n=36)

	1	2	3	4	5	Total
Strategy and commitment		8	22	42	28	100
Decision making		5	17	50	28	100
Feedback	3	5	28	42	22	100
Confidence		3	11	56	30	100
Free communication and team work		3	27	58	22	100
Infrastructure		14	30	45	11	100

1 = Totally disagree, 2 =Rather disagree, 3 = Neutral, 4 = Rather agree, 5 = Totally agree

Strategy work and commitment to strategy, decision making, feedback and confidence explained 44 % systematic variable range. Surprisingly, organization strategy formulation and definition, strategy based human resource development, strategy discussion and human resource measurement explained only 9 % systematic variable range. Free communication and team work support with workplace planning explained 48 % KM systematic variable range, but organization infrastructure didn´t affect that much, only 9 % explanation. Based on analyses strongest matter that explains variance of Knowledge Management systematic is communication process.

Definition of Knowledge Management and goals

In this study was asked with open questions, do practice field and science have common understanding of the Knowledge Management content and term. Based on analyses the content was discursive. Table 3. explains the terms that were used when speaking of KM. Other terms for Knowledge Management were: Company Continuous Improvement, performance management, human resource development, Resource-index and Strategic Resource Planning. Two respondents told that they didn´t have any term for Knowledge Management, and one respondent told, that it was difficult to name term for one function.

Table 3. Usage of Knowledge Management terms

Information Management	Competence Management or Development	Competence Model	Other	No named term or can´t say	Total
4	4	2	6	3	19
22 %	22 %	10 %	30 %	16 %	100 %

How did the respondents see the definition and functions of Knowledge Management in organizations? The most important function for KM was strategy based information and competence development to reach the targets that are set (35 %), especially proactive development. Focusing on competencies was the second important function (25 %), and focusing on core operations with timely information (15 %) was third function for KM. Social and cultural point of view came out with functions´ organizational capability raising (10 %) and value based function (10 %). Essential in KM is information and communication through all organization levels. Only one respondent told that goal for Knowledge Management was interaction (see Table 4).

Table 4. Definition of Knowledge Management

Action with values and organiza-tion enrichment	Proactive and systematic competence process development	Focusing on competences	Focusing on core operations	Organiza-tion capability	Goal-directed inter-action	Total
2	7	5	3	2	1	20
10 %	35 %	25 %	15 %	10 %	5 %	100 %

The most important goal for Knowledge Management was strategy based development (33 %). Business intelligence capability development (22 %) was the second important goal, and the third was information and resources management (18 %), especially timely information. Social and cultural point of view came out also: KM was a way to effect attitudes. Other goals (12 %) were competence management, value based management and clear areas of

responsibilities. Transparency of Knowledge Management as a goal was told only by one respondent, as can be seen in Table 5.

Table 5. The objectives of Knowledge Management

Strategy based development	Business capability development	Attitude development	Knowledge and resources meet	Other goals	No such goals	Total
9	6	2	5	4	1	27
33 %	22 %	7 %	18 %	16 %	4 %	100 %

Process capability

Process capability was investigated in communication technology utilization, information and competence procurement, sharing, organizing and developing, and in information and competence implementation. Data and knowledge protection was evaluated in organizational capability to protect information internally and externally.

Measuring KM utility in the companies, we got responses that 36 % of the companies had regular measures, 36 % not so often, and 14 % didn´t measure often enough. Climate survey and well-being survey were made more often: 85 % of the companies regularly, 11 % not so often, and 6 % was unsure about the sufficient measuring.

Controlling decisions and causations in organizations, information of causations was made well in 33 % of the organizations. 45 % told that they rather agreed, and 11 % of the respondents told that there weren´t inform enough in the company.

The data was operationalized internal and external information utilization concerning information and competence obtaining and application. In this study internal information includes knowledge that is needed in internal process operation. External information is communication with partners and contacts, and the information which comes outside of the company. Knowledge Management development was analyzed by drawing on descriptions of information and communication technology utilization, and also how organizations were able to utilize new and old knowledge constructively, see table 6.

Table 6. Rotated Component Matrix (Sum variable) for usage of Knowledge and Information Technology in organizations (%, n=36)

	1	2	3	4	5	Can´t Say	Total
Use of internal data and information		3	36	50	11		100
Use of external data and information		5	14	58	23		100
Knowledge and Competence Development		3	31	47	19		100
Knowledge Protection		3	19	39	36	3	100

1 = Totally disagree, 2 =Rather disagree, 3 = Neutral, 4 = Rather agree, 5 = Totally agree

Real-time information, easy to find the information, and learning in work explained 49 % organization internal information utilization variable range. Information in the right place and finding the information, noticing proposals of improvements and updating process practices and instructions explained only 10 % organization internal information utilization variable range. As Table 6. demonstrates internal information utilization is in quite good level in these organizations (value = 50 %).

Use of external data and information, based on responses, was even better level than use of internal information (Table 6. value 4 = 58 % and value 5 = 23 %). Existing process in organization concerning external information of new products and services, competitors, markets and new information explained 35 % of organization external information utilization variable range. Also network with new ideas, and reverence of new employee and his knowledge and competence included this component. It seems, that there is an effect between employer and his support for network of employee (r =, 516, n = 36, p=0,002). However, 6 % of the respondents told that they didn´t know, if there is process for supplying information of new products and services, competitors, or process for communication with partners. 9 % told that there wasn´t any process for that. The new employee and his knowledge and competence utilization got only 39 % Coefficient of Determination, which can consider low level (R^2 = 0, 39, F (2, 34) = 10.2, p = 0,000).

The level of Knowledge Management development for companies were seen rather good level (Table 6. value 4 = 47 %.) Strategy based consistency for evaluation of competency, utilization and development explained 51 % of Knowledge Management development variable range. As mentioned before, there is no efficient way to utilize new information that comes with new employee. New information and competence development with team work were also low level, explaining 10 % of Knowledge Management development variable range.

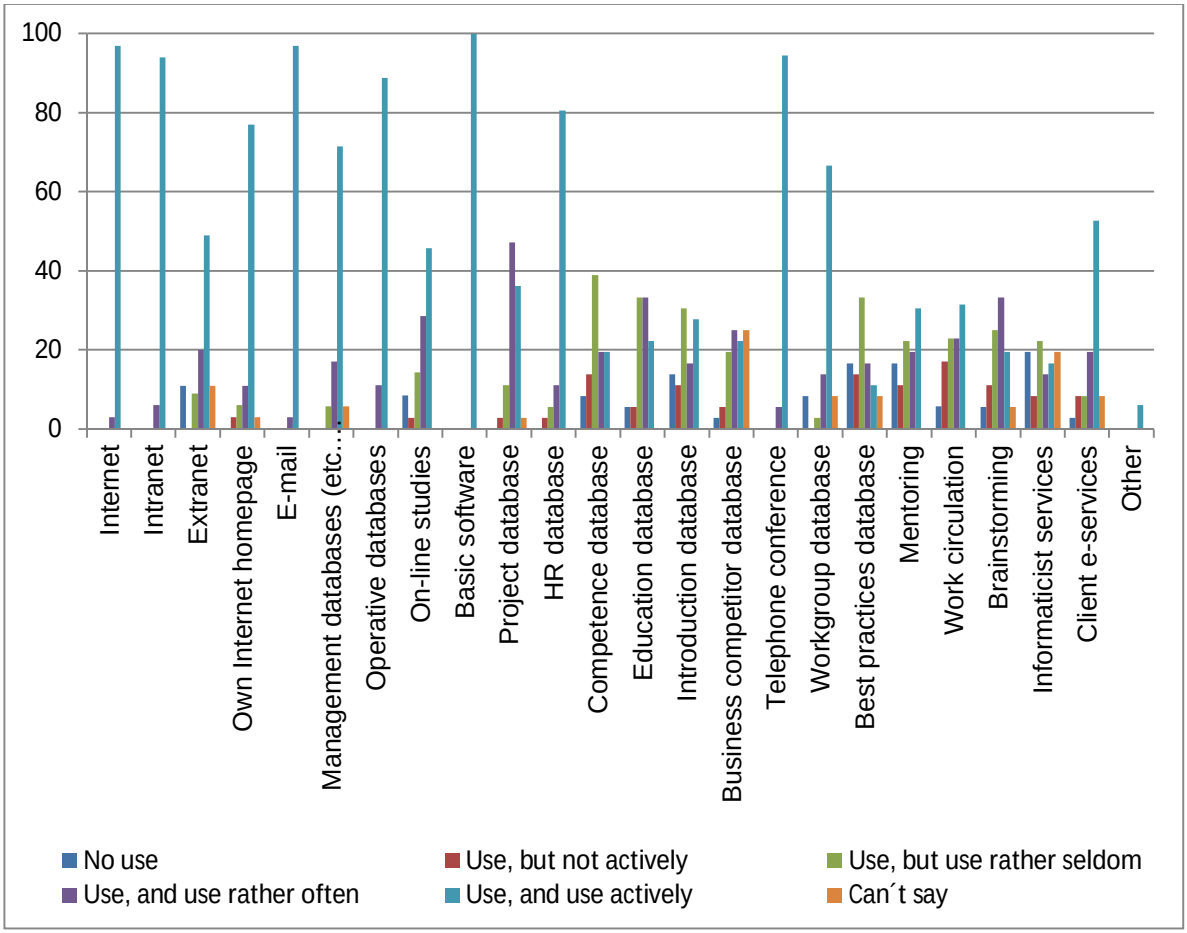
As Figure 1 demonstrates, the information systems are used actively in process management: operational database actively were used in 89 % of the companies, and rather often 11 % of the companies. Also project management systems were utilized well: 36 % actively, 47 % rather often and 11 % rather seldom.

Human resource database were used by all companies: 81 % actively, 11 % rather often, and 9 % were using seldom. Intranet was efficient way to deliver information: 94 % used it actively and 6 % rather often. Considering education and competence database, results show that the level of activity is low, or some of the companies didn´t have those systems at all. Positively can be said, that online learning environments are used actively: 46 % of the companies used actively, 29 % rather often, 3 % had those systems, and 8 % didn´t have online learning systems in their company.

External communication use with technology systems has been increased strongly since 2002 research. In 2002 half of the companies used Internet, and now all the companies use Internet actively: 77 % of the companies were using actively, and 11 % rather often. One explanation can be that the companies have their own web page, and they may have web services and interaction with their customers. Utilization with customer database has increased from 56 % to 97 % in companies, in which 53 % used actively and 19 % rather often. Supplier and customer databases have been integrated after year 2002 in Finland, which can explain the increase. Other information systems included Chat platforms, document management, remote access platforms, Wiki platforms, information television and Ideal Work concept.

Remarked notice, that in organizations they invest real time information (for operation) and external connections (clients, outside interaction) information management, instead of information process and competence development systems were inactive use. As such, one can ask based on the research findings that is the respondent´s understanding of Knowledge Management development is unrealistic comparing to use of information systems activity?

Figure 1. Usage of Information systems (%), n=36.



Data protection in these organizations seemed to be in quite good level (Table 6. value 4 =39 % and value 5 = 36 %), and there were definition for data protection. Strongest explanation (35 %) of data protection variable range comes from how to communicate data protection in companies. Other explaining component (13 %) included information about external threat against knowledge, also, how to ensure, that organization can get the knowledge to the company when employee is leaving the company. Variable “Our organization has process for ensure the knowledge to the company when employee is leaving the company” is very interesting, because the same variable seemed to be the strongest influence of ensure competence development variable range (r =, 71, F (8, 30) = 6, 8, p=0,000). Research does ask that are companies investing employee´s know-how after they have heard, that know-how is leaving the company. Another interesting notice came out in data protection. Many of the respondents (16 %) told that they don´t know exact rules, definitions for secret facts or data protection systems in their company. A questions can be raised that are there enough knowledge protection in organizations?

Organization Performance and Challenges

The central elements in organization performance and capability are productivity and accomplishment, organizational challenges and development goals. Table 7. exhibits, that organizations capability to anticipate, develop, innovate and adapt process is “rather good level” (Table 7. value 4 = 50 %.) External requirements for process changes or development were strong explanation of organizational performance variable range (59 %.) Second explanation (11 %) was organizational capability to reduce overlapping functions and information. Overlap information reduction consisted statistically very significant (r =, 54, F (4, 34) 8,8, p=0,000.) Updated information can improve organizational performance.

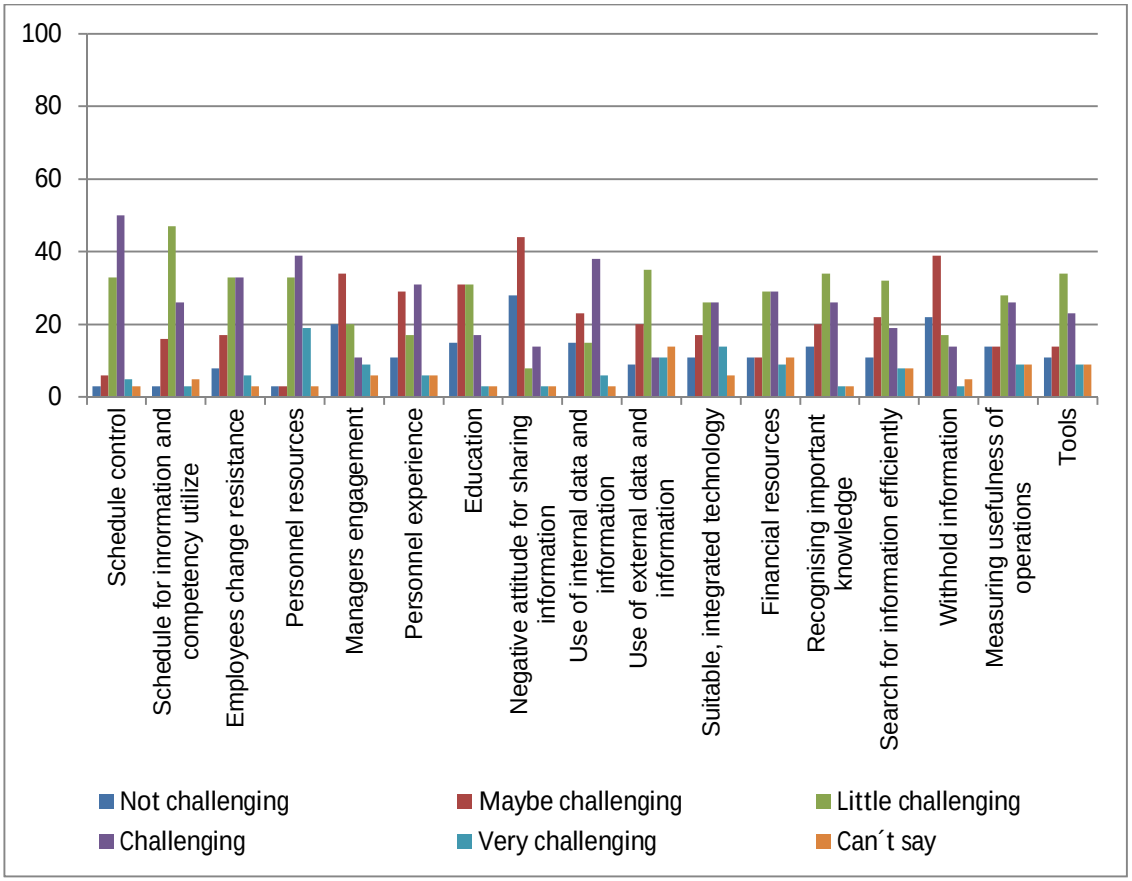
Table 7. Rotated Component Matrix (Sum variable) for Organizational productivity (%, n=36)

	1	2	3	4	5	Can´t Say	Mis.	Total
Organizational capability improvement		3	16	50	25	3	3	100

1 = Totally disagree, 2 =Rather disagree, 3 = Neutral, 4 = Rather agree, 5 = Totally agree,
Mis = Missing answer

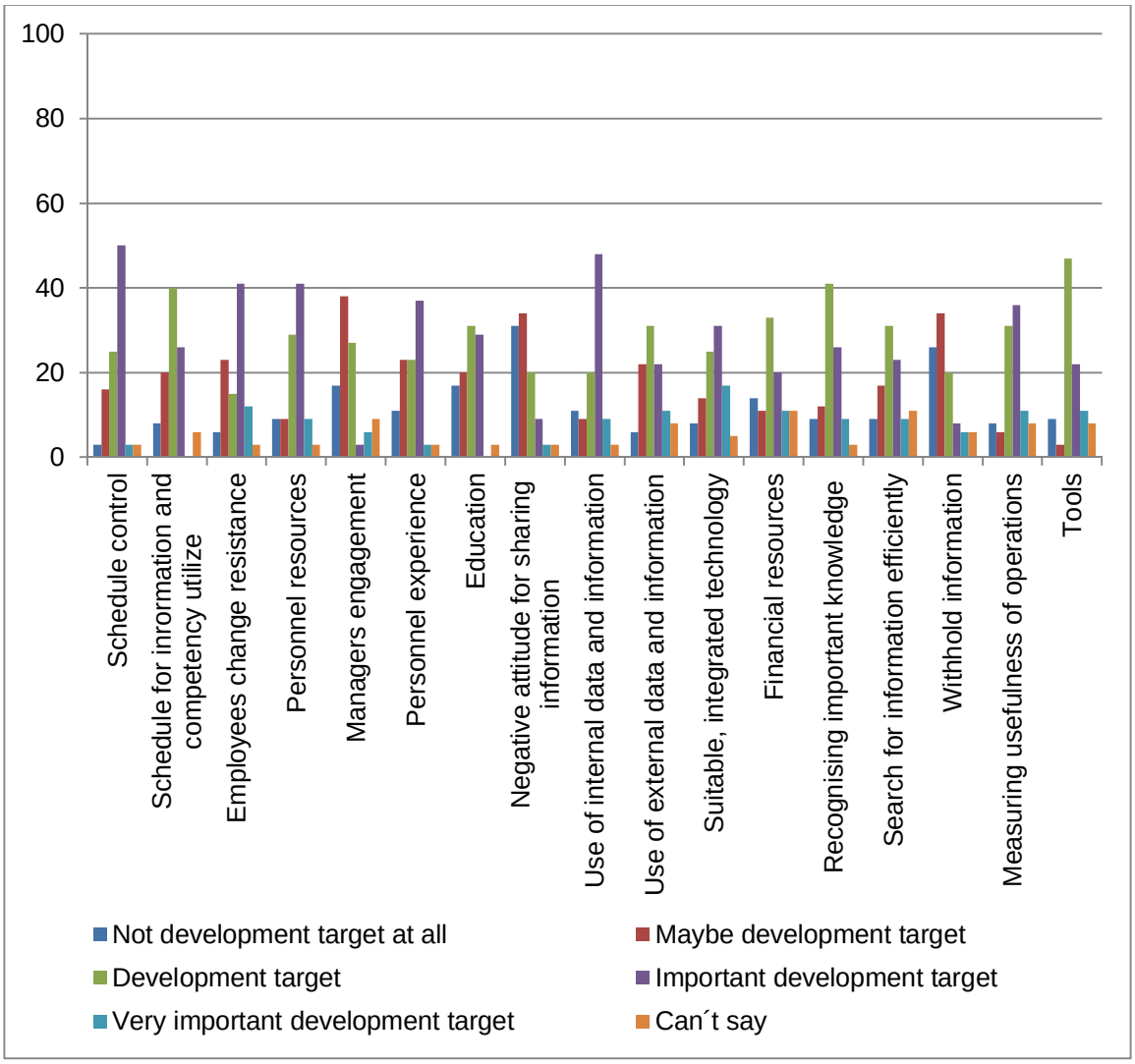
Following Figure 2. demonstrates, what kind of challenges organizations had in Knowledge Management. The percentage is calculated with values 4 and 5 percentages together. Based to responses, the biggest challenge was personnel resource (58 %), second biggest was challenge to keep schedules (55 %), and as third biggest was organization internal knowledge utilize (44 %.) 40 % of the respondents told, that it was challenging to integrate suitable technology to the processes.

Figure 2. Organizational challenges (%, n=36)



Most important target for development was internal knowledge utilization (57 %.) Measuring with many indicator of this study confirms, that Knowledge Management utilization or recognition of resources were not that effective than there is potential in organizations. The second important development target were change resistance and schedule management (53 %.) As a challenge, change resistance in KM was number five with 39 % of responses. The third was personnel resource management developing (50 %), and the fourth was suitable and integrated technology systems for operational support (48 %.) Figure 3. demonstrates organization´s development targets.

Figure 3. Organizational development target (%, n=36)



In all, there can be identified several rather important development areas and targets in Knowledge Management practices in large companies based on the research findings.

CONCLUSIONS AND COMPARISON WITH YEAR 2002 RESEARCH RESULTS

This study examined, with multidisciplinary approach, empirically the practices and effectiveness of Knowledge Management, and the objectives of KM in Finnish large companies.

The results indicate that the systematic of KM is stabilized part of the organization operations. Process management and communication utilize most effectively technology

information systems. However, competence and education database as resource have more capability than the organizations capitalize. Knowledge Management terminology has stabilized in these companies, partly focusing on certain function. In 2002 competence management has been used more often than Knowledge Management. Based on this study, both terms are used equally.

External communication utilization with information technology has increased strongly since 2002 research. Internet was used half of the companies year 2002, and now Internet was in active use in all the companies, also own web pages were used actively. Customer and supplier interaction with electrically systems has escalated. New ways of information interaction discourse and sharing systems have been developed as a part of organization operations, for example Chat platforms or information process and document platforms.

Human resource database use has increased from 97 % to 100 %, in which 81 % actively, 11 % rather often and 9 % of the companies used seldom. Intranet was the way to inform personnel in all companies: 94 % actively and 6 % rather often, while in 2002 89 % had some kind of internal information system.

Companies, who used education database for human resource evaluation, were increased from 86 % to 94 %, in which 22 % of the companies used database actively. But 6 % of the companies didn´t have any education database. Competence database utilization has increased from 72 % to 91 %, but only 19 % used actively, and 9 % didn´t have competence database in use. Online learning environments are in active use. Selection and engagement in the online learning process is not depended on time or certain place.

In 2002 respondents represented human resource functions. In this study the respondents were human resource administration and IT-technology employees, because researchers wanted to get both human and technical point of view. Knowledge Management was seen important or very important way to utilize organization internal information in schedule and human resource management, and a way to effect personnel´s attitude. Also suitable and integrated technology to support organization processes was important.

One goal in 2002 was to implement KM to organizations´ systematic operations. Second goal was to increase capability to do network co-operation. Also goal was to developed organization operations because of the commercial changes, which meant new challenges for Knowledge Management. Based on responses, in these companies the goals that were set, are obtained. In certain organization sector KM systematic actualizes, for example

process management and external information utilize the possibilities well. Still, there are challenges as well. Organization internal knowledge for effective use was a challenge in 2002 – in this research the same thing was big challenge for organizations.

Concerning competence development and innovations, our study illustrates that organizations don´t take effective advance of technology. One challenge in 2002 was retirement, and how to ensure that the know-how stays to organization. Bases on this study, these organizations have the processes to ensure, but timing for ensure not. It seems, that the organizations wake up to ensure, when the employee is already leaving. Wouldn´t it be better to take that know how organization´s possession before, because getting that know how seems to be the strongest influence what comes to ensure competence development in organization.

Knowledge Management has developed over ten year, amount of information and the velocity of information. On the other hand, technology makes it possible to collect data rapidly and process data and document data easily. But are the processes adapting as fast as technology? And what about people, are they developing in the same time than technology? Knowledge Management could help organizations to put on effort to those resources that are not used effectively, or to decrease overlapping information and functions. These invests are one way to search productivity in companies.

In sum, this study present theory and data regarding what kind of practices of Knowledge Management in large companies are and reflects how those meet the suggested theory-based concepts and practices. The study provides a causal argument to link of need of concrete tools and the challenges that organizations have in daily operations, especially internal knowledge and competence utilization effectively.

Our study also carries limitations. First, our data was collected average half of the 50 largest companies in Finland. Even though the results were reflecting same kind of specifics, the thesis can see as descriptive rather that as universalize. Second, the sample is quite small, and therefore the results are rechecked with many analyze methods.

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