

Meeting Organizational Performance with Shared Knowledge Management Processes

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1. Introduction

Research on knowledge management and organizational memory has a thriving history. Academics and practitioners have long focused on the structure of organizational memory (Walsh & Ungson, 1991) and its related knowledge processes (Spender, 1996), and have investigated characteristics and mechanisms of organizational memory focusing on retention bins (Walsh & Ungson, 1991), knowledge retention (Spender, 1996), and knowledge sharing processes (Hansen, 1999; Hayes & Walsham, 2003; Von Krogh, 2003). Furthermore, research has investigated the role of information technology repositories in the gathering and sharing of knowledge (Alavi & Tiwana, 2003) and has pointed out the connection between knowledge management and information technology (Franco & Mariano, 2007). Despite this manifest interest, a few empirical studies have been developed on organizational memory (Stein & Zwass, 1995) and most contributions have been theoretical studies (Walsh & Ungson, 1991; Stein, 1995).

This chapter is an empirical contribution to the knowledge management and organizational memory debates. The purpose of this chapter is to contribute to knowledge management theory and to provide a practical approach for managing information technology repositories. This study investigates how knowledge is stored and retrieved in a professional setting and contributes to define a comprehensive framework on the use of organizational memory systems to improve performance. Qualitative research methods are used to collect data from an American company through individual semi-structured interviews, on-site observations, and document analysis. The qualitative software package Atlas.ti® is used to analyze data. Findings highlight the importance of individual attitude, i.e. motivation and efforts, managerial support, and shared organizational technologies in the management of organizational processes and reveal factors influencing the processes of knowledge retention and retrieval. This study points out the role of shared organizational memory systems and suggests strategies to improve the effectiveness of information technology repositories.

The chapter is organized as follows. In the first section the relevant literature on organizational memory, knowledge management, and information technology repositories is discussed. Follows a detailed description of the research methodology and a list of methods used to collect and analyze data. Findings are presented and an interpretation of

them is provided. The last section focuses on conclusions and implications for theory and practice. Limitations connected to empirical generalizability, and suggestions for future research are also discussed.

2. Background

The importance of organizational memory is considered by several studies (Huber, 1991; Walsh & Ungson, 1991) as a key component of organization success (Kogut & Zander, 1992). The literature on the processes of knowledge retention and retrieval is an extension of works on organizational memory (Walsh & Ungson, 1991), organizational knowledge (Polanyi, 1966), and knowledge management (Nonaka, 1994). How individuals store knowledge into the organizational memory and how they retrieve this knowledge to make decisions is crucial.

But what is organizational memory? Why should researchers and practitioners be interested in the processes of knowledge retention and retrieval from organizational memory?

Organizational memory has been defined in a variety of ways. The definition chosen for this study is stored knowledge "from an organization's history that can be brought to bear on present decisions" (Walsh & Ungson, 1991, p. 2).

Recent studies have demonstrated that the processes of knowledge retention and retrieval (Mariano & Casey, 2007; Gammelgaard & Ritter, 2005) are critical components of organizational memory. The analysis of these processes contributes to decision making (Shrivastava, 1983; Walsh & Ungson, 1991), reduces the time search of previous stored knowledge (Walsh & Ungson, 1991), and increases the organizational awareness of its own stored knowledge (Hansen et al., 1999; Franco & Mariano, 2009).

According to Walsh and Ungson (1991), memory retention structures are those organizational locations into which both existing and new knowledge can be stored. They are the locus of organizational memory (p. 61), a non-centralized and multiple memory nodes system made up of individuals and their own memories (Argyris & Schon, 1978), cultures (Schein, 1984), transformations (Cyert & March, 1963), structures (Walsh & Dewar, 1987), ecology - the workplace structure (Campbell, 1979), and external archives (Porter, 1980). As also stated by Shrivastava (1983) "organizational members know about these systems, even though some of the systems may not have been explicitly verbalized or documented" (p. 18).

This study considers the role of shared organizational memory systems - and how they can be managed - and suggests strategies to improve the effectiveness of information technology repositories. This study also addresses the problem of memory update. This process allows the preservation of the quality of the system (Goodman & Darr, 1998; Huber, 1991) and it safeguards the organization against the loss of knowledge caused by the effect of turnover (Argote et al., 1990; Carley, 1992).

3. Methodology

This was a qualitative case study research. In this study a social constructed knowledge claim (Creswell, 2003) was chosen to develop the research design. Meanings were constructed by human beings as they engaged with the world they interpreted (Crotty, 1998). Open-ended questions (Merriam, 2001) were used to let participants express their views. The study tried to understand the context and the setting (Creswell, 2003; Miles & Huberman, 1994; Yin, 2003) of participants through several visits to it. Information was

personally gathered by the secondary researcher from informants (Merriam, 2001). The process was largely social and inductive (Creswell, 2003), with the generation of meanings from the data collected in the field (Miles & Huberman, 1994).

3.1 Research site and sampling strategy

The site of this study was located in Virginia (USA). The unit of analysis was individual action and the research setting was one division of the organization. This was an embedded research design (Yin, 2003). The main units of analysis were employees at the organization department level. Data were collected across five departments. At the time of data collection, 83 employees worked in the five departments. Sample determination was based on the position, department unit, and on tenure, as shown in Table 1.

Participant	Position	Department Unit	Tenure	Interview Type
P1	Consultant	Unit 3	6-23 Months	Face-to-Face
P2	Analyst and Consultant	Unit 2	24-48 Months	Face-to-Face
P3	Analyst	Unit 5	49+ Months	Face-to-Face, Email Feedback
P4	Consultant	Unit 2	6-23 Months	Face-to-Face
P5	Administrative Assistant	Unit 5	6-23 Months	Face-to-Face
P6	Consultant	Unit 3	49+ Months	Face-to-Face
P7	Executive	Unit 5	24-48 Months	Phone Call
P8	Consultant	Unit 2	49+ Months	Phone Call
P9	Editor	Unit 1	49+ Months	Face-to-Face
P10	Administrative Assistant	Unit 1	6-23 Months	Face-to-Face
P11	Executive	Unit 3	24-48 Months	Face-to-Face
P12	Designer	Unit 1	24-48 Months	Face-to-Face
P13	Analyst	Unit 4	6-23 Months	Face-to-Face
P14	Analyst	Unit 4	24-48 Months	Face-to-Face
P15	Analyst	Unit 4	49+ Months	Face-to-Face

Table 1. Details of participants

3.2 Data collection and analysis

This study was conducted in the United States in 2005. Fifteen individual semi-structured interviews (Merriam, 2001), in-site observations (Creswell, 2003), and document analysis (Merriam, 2001; Creswell, 2003) were employed to collect data. Participants were selected on the recommendations of a "key informant" (Miles & Huberman, 1994). In-site observations lasted two hours on average and an observation protocol was used to take field notes (Creswell, 1998). Private and public documents and audio-visual materials were also collected. They included the analysis of the organization memory systems, i.e. department

hard drive folders, share points, and the organization Intranet. The use of member checks (Stake, 1995; Lincoln & Guba, 1985), peer debriefings (Creswell, 2003), and triangulation methods ensured the validity of this study (Kvale, 1989) and increased the accuracy and credibility of collected data (Lincoln & Guba, 1985) as shown in Table 2. Interview transcriptions were coded and analyzed through the help of Atlas.ti® qualitative data analysis software package. The coding activity (Miles & Huberman, 1994; Lincoln & Guba, 1985) involved four basic operations: adding codes, returning to codes and interrogating them in a new way, seeing new or previously not understood relationships within units of a given category, and identifying new categories. This collected information was summarized, detailed described, and an interpretation of it was made (Miles & Huberman, 1994).

Strategies	Techniques employed in this research study
(1) TRIANGULATE DATA SOURCES	Data were triangulated examining evidence from four different sources of explanation: observations, individual interviews, document analysis, and audio-visual material
(2) USE OF MEMBER-CHECKS	Interview transcripts were sent to all participants. Informal member-checks with employees during the time spent in the organization were also conducted by the secondary researcher. Two participants and a department manager were also asked to determine whether they felt the final report was accurate
(3) USE OF RICH, THICK DESCRIPTIONS	Rich descriptions of the research context and the setting were made with detailed explanation of data collection and data analysis processes
(4) CLARIFY THE BIAS	Before data collection, the secondary researcher asked herself the interview questions and she detailed defined her role within the division and in the process of this research study
(5) PRESENT DISCREPANT INFORMATION	In the qualitative narrative, all discrepant information run counter to the themes was fully presented and discussed
(6) SPEND PROLONGED TIME IN THE FIELD	The secondary researcher spent almost two months in the research setting. Descriptions of the site and the people involved in the study were made
(7) USE OF PEER DEBRIEFING	Three graduate students were invited to review the qualitative narrative and ask questions about the study

Table 2. Validating the accuracy of findings

4. Findings

We studied knowledge retention and retrieval processes. Participants had to gather knowledge stored in shared organizational technologies or informal social networks and use it in their day-to-day decisions. Organizational memory systems, individual attitude, i.e. motivation and effort, and managerial support emerged as critical elements in the management of organizational processes and formed the basis for the development of our framework on organizational performance. In the following paragraphs we discuss findings

with respect to the structures, processes, and solutions, and we present our framework on the use of organizational memory systems to improve performance.

4.1 Structures: organizational memory systems

Two groups of organizational memory systems emerged from data collection and analysis. The first group referred to social networks and regarded the informal gathering of knowledge from coworkers or managers.

The second group pointed out the role of shared organizational technologies in the retention and retrieval of organizational knowledge. We discuss this second group of organizational memory systems. The decision is made because even though the role of social network has received increased attention in the literature and has represented a crucial topic in the management of organizational knowledge, its discussion is beyond the scope of this paper. In this paper the focus is on the role of organizational memory systems, i.e. shared organizational technologies in the retention and retrieval of organizational knowledge.

From data analysis, three organizational memory systems were identified: (1) web-based tools, i.e. Intranet and share points; (2) non-web based tool, i.e. hard drives; and (3) hard copy documents, e.g. department policies and procedures. In addition, personal laptops and email folders were mentioned as individual dispersed memory systems to store and retrieve valuable knowledge.

A major finding regarded the effectiveness of these organizational memory systems. A common problem was connected to the impracticality to retrieve knowledge from a centralized system due to its disperse location within the organization. This problem led to two distinct but complementary issues: duplication of knowledge, and knowledge loss. The first effect created knowledge overload with impacts on the knowledge retrieval process; the second effect prevented the organization from being able to retain valuable knowledge for future uses and forced employees to reinvent the wheel in the decision making process. It was found that duplication of knowledge and knowledge loss were related to the individual attitude of employees, the allocation of working hours – including the time spent to keep the organizational memory systems updated –, and the managerial support, and that the organizational culture impacted the correct implementation and use of the organizational memory systems:

“It’s a cultural thing. You can have all the tools that you want but if there is not a culture that uses these tools...if you are not going to find the value, you are not going to use it...” [P2]

A secondary finding related to the types of organizational memory systems being used. Both web-based tools, i.e. Intranet and share points, and non-web based tool, i.e. hard drives, were extensively utilized in all department units. Hard copy documents were also considered as valuable sources of knowledge. From the analysis of individual interviews it turned out that only in one department unit participants did not mention personal laptops or email folders as valuable sources of knowledge but focused on the centralized non-web based repository. Counterintuitively, we might say that the broad use of such a centralized hard drive might have influenced the working style of employees, as a participant claimed:

“I think we are better at what we do now, we are more detail-oriented, we have more processes and policies. Like the AAR, and the hard drive... you have to store more stuff on the hard drive now, you know, if I have just written this piece of paper and I have just probably left it on my desk, I will put it on the hard drive, so the using of the hard drive for everything which contributes to build our own knowledge. In the past we didn’t which is why we lost all the knowledge when people left” [P14]

Table 3 summarizes information on the use of organizational memory systems across the department units.

Department Unit	Intranet		Hard Drives	Hard Copy Documents
	Company Intranet	Share Point		
Unit 1	√		√	√
Unit 2	√	√	√	√
Unit 3	√		√	
Unit 4	√		√	√
Unit 5	√		√	
TOTAL	5	1	5	3

Table 3. The use of organizational memory systems

4.2 Processes: knowledge retention and retrieval

From data analysis it came out that knowledge retention and retrieval were closely related knowledge processes.

As a general finding, it was found that individual attitude of employees, organization allocation of working hours, and managerial support impacted the correct implementation and use of the organizational memory systems which in turn affected the retention and retrieval of knowledge.

With regard to the knowledge retrieval process, three factors were likely to influence it: the lack of a centralized organizational memory system; the complexity in the identification of valuable knowledge to retrieve due to a lack of rules and procedures to update the organizational memory systems; and the lack of individual motivation and/or individual effort to keep the organizational memory system up-to-date. It was found that this last finding was affected by the culture of the department and the ability of managers to promote a sharing working environment where employees felt free to make their individual knowledge available to others to create a collective base of expertise.

The process of knowledge retention was influenced by the lack of rules and procedures to update the organizational memory system, the lack of training on how to use the organizational memory system software, and the lack of motivation/efforts of individuals to keep the organizational memory system updated.

In particular, the absence of detailed maintenance procedures forced the system to be informal and generated unofficial social networks which helped the gathering of tacit knowledge from coworkers or managers:

"...if it doesn't have good updates...it's not going to be used. So...it's a sort like the chicken and the eggs and which comes first...there is inconsistency in what people put in into it [the organizational memory structure] and there is inconsistency in who is using the system...so because it is inconsistent that makes the process of gathering the knowledge inefficient because I am looking for things that may not even be there. And because of the inconsistency that forces the process to be very informal, so I just walk and I talk to them [other coworkers]" [P1]

4.3 Solutions

An outline of possible solutions to improve the use of organizational memory systems and increase performance is presented with respect to knowledge retention and retrieval processes.

1. To avoid both knowledge loss and duplication of knowledge, suggested actions are related to the creation of a centralized organizational memory system to store explicit knowledge, e.g. policies, procedures, past projects, customer reports.
2. The facilitation of informal social network is suggested to improve the sharing of tacit knowledge, e.g. expertise and know how.
3. The creation of a sharing culture has to be facilitated by managerial support and has to include specific working hours to update the organizational memory system or create informal sharing of knowledge events, e.g. brown bag meetings.
4. Other recommended actions are related to the introduction of rules and procedures to update the organizational memory system to avoid inconsistency in the stored knowledge, e.g. codification procedures, along with training programs on how to use and update the repository.
5. Finally, the introduction of a web master to monitor both the structure and knowledge processes is recommended to keep the system up to date and facilitate its future use.

4.4 Outcome: the framework

The comprehensive framework developed from the analysis of data is shown in Figure 1 and explained in Table 4. It provides a representation of emerged themes and summarized the critical elements in the management of organizational knowledge processes to improve performance.

Structures	Knowledge Processes	Issues	Causes	Solutions
Disperse organizational memory systems	Knowledge retention	Knowledge loss	Individual attitudes Organizational mechanisms	To create a centralized organizational memory system to store explicit knowledge
	Knowledge retrieval	Duplication of knowledge	Managerial support	To facilitate informal social network to share tacit knowledge To introduce rules/procedures to update the system, training programs on how to update it, and a web master to monitor it To support the creation of a sharing culture

Table 4. The framework and its related mechanisms

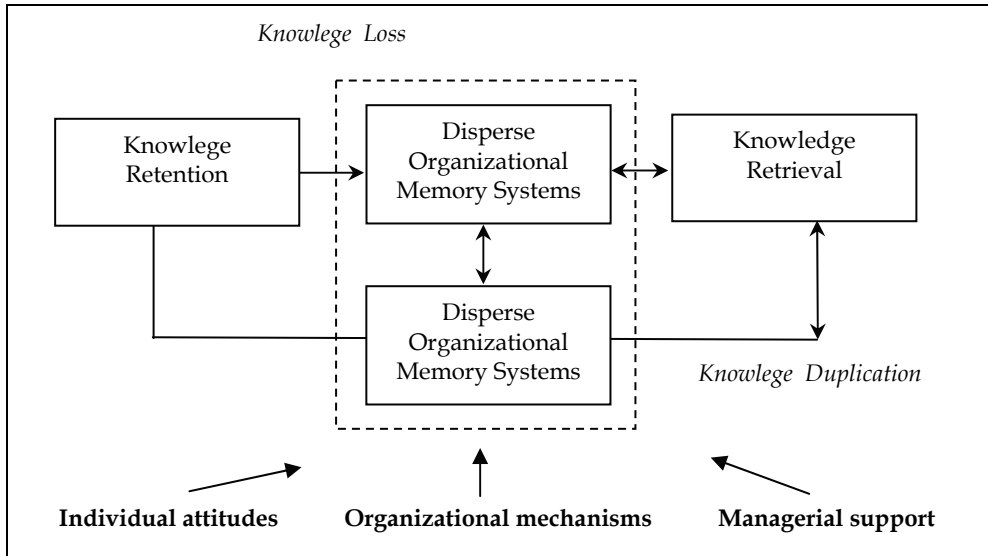


Fig. 1. The framework

5. Interpretation

This study was a qualitative contribution to the knowledge management and organizational memory debate. The purpose of this study was to investigate the role of shared organizational memory systems to suggest strategies to improve the effectiveness of information technology repositories.

Our findings indicate that internal archives were used to retain and retrieve knowledge. Participants used internal repositories such as Intranet (Hansen et al., 1999) – which included both share points and the company Intranet –, hard drives, and hard copy documents (Gherardi et al., 1998) confirming the importance of information technology tools to support knowledge processes (Alavi & Tiwana, 2003), i.e. creation, transfer, storage, and retrieval of knowledge.

A major problem was connected to the disperse location of organizational memory which in turn created duplication of knowledge and knowledge loss. The first effect impacted the knowledge retrieval process; the second effect prevented the organization from being able to retain valuable knowledge for future uses.

It was found that duplication of knowledge and knowledge loss were related to individual attitude, organizational mechanisms, managerial support, and organizational culture (Orlikowski, 1996).

In particular, the process of knowledge retention was influenced by the lack of rules and procedures to update the organizational memory system (Zack, 1999), the lack of training on how to use the organizational memory system software, and the lack of motivation/efforts of individuals to keep the organizational memory system updated (Orlikowski, 1993). Furthermore, the absence of detailed maintenance procedures forced the system to be informal and generated unofficial social networks which helped the gathering of tacit knowledge from coworkers or managers.

These findings confirmed that the lack of training affected the motivation to post notes or replies to it (Orlikowski, 1993) and pointed out the importance of ability, motivation, opportunity (Argote et al., 2003) and the organizational culture in the knowledge retention process. These findings are also consistent with the body of literature on intellectual capital (Brown & Duguid, 1998) and are congruent with research on social networks (Cross & Sproull, 2004).

These findings suggested strategies to improve the effectiveness of information technology repositories in terms of modifications to the organizational mechanisms, e.g. establishment of specific working hours to update the organizational memory, but also training programs and the introduction of a webmaster to monitor the organizational memory systems (Franco & Mariano, 2007).

This study also contributed to the analysis of organizational memory systems providing insights about a new knowledge source, i.e. personal laptops considered as valuable sources of explicit knowledge by 80% of participants. These repositories were considered as a place to retrieve knowledge about clients and past projects but also information technology repositories to store templates and lessons learned. Email folders were also mentioned as electronic tools to store and retrieve knowledge. These findings confirmed the criticality of single computer-based systems (Olivera, 2000) and the complementarity of knowledge retention and retrieval as critical organizational knowledge processes.

6. Conclusion, implications for theory and practice

Using empirical research data, this study investigated how knowledge is stored and retrieved in an American company and contributed to the growing body of literature on the use of knowledge, technology, and memory systems to improve organizational performance. It demonstrated the importance of individual motivation and efforts, managerial capabilities, and shared organizational technologies in the management of organizational processes and revealed factors influencing the processes of knowledge retention and retrieval. This study pointed out the role of shared organizational memory systems and suggested strategies to improve the effectiveness of information technology repositories.

The research data revealed that the process of knowledge retention and retrieval were influenced by individual attitudes, organizational mechanisms, and managerial support.

Three factors were likely to influence the knowledge retrieval process: the lack of a centralized organizational memory system; the complexity in the identification of valuable knowledge to retrieve due to a lack of rules and procedures to update the organizational memory systems; and the lack of individual motivation and/or individual effort to keep the organizational memory system up-to-date.

This last finding was also related to the culture of the department and the ability of managers to promote a sharing working environment.

The process of knowledge retention was influenced by the lack of rules and procedures to update the organizational memory system, the lack of training on how to use the organizational memory system software, and the lack of motivation/efforts of individuals to keep the organizational memory system updated. It turned out that the absence of detailed maintenance procedures to update the organizational memory systems forced employees to gather tacit knowledge from their coworkers through informal mechanisms of sharing, i.e. social networks.

Organizational culture, individual preferences, and training programs impacted the employees' willingness to update the organizational memory systems and had a consequence on the future use of those repositories.

Findings make implications for theory regarding the extend to which effective knowledge repositories might influence the employees' first preference to see out their colleagues to find knowledge.

Moreover, findings point out personal laptops and email folders as crucial electronic repositories to store valuable knowledge.

Findings suggest the need to facilitate a sharing culture through the support of managers who have to include specific working hours to update the organizational memory systems, create informal sharing of knowledge among employees, e.g. brown bag meetings, and promote the willingness to make individual expertise available to the other members of the organization.

Managers should also promote the introduction of rules and procedures to update the organizational memory system e facilitate training programs on how to use and update the repository. Finally, managers should select a person, e.g. webmaster to monitor both the organizational memory systems and the knowledge processes to ensure the correct update of the repositories and facilitate their future uses.

7. Limitations and future research

This study had limitations concerned the empirical generalizability because it was a single case study analysis.

This study focused only on knowledge retention and retrieval and did not consider other organizational knowledge processes.

Further research is needed to determine if similar factors influence the process of knowledge retention and retrieval, especially with regards to the impact of working hours on such a process. Also, future research should investigate the extend to which effective knowledge repositories might influence the employees' first preference to see out their colleagues to find knowledge.

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