KNOWLEDGE RETENTION IN CONSTRUCTION IN THE UAE

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With employees leaving construction organizations for all sorts of reasons, it is imperative that organizations look at ways to retain their knowledge. This paper presents a four step process in order to ensure knowledge retention. The four steps include: Socialization, codification, combination and internalization. A four level maturity model is also presented in this paper. These levels of the maturity model provide an indication of how effective will the knowledge retention be in an organization. The levels also provide the ability to assess what needs to be done in order to improve the effectiveness of knowledge retention in an organization. In order to assess the effectiveness of the model, it was applied to a construction consultancy company in the United Arab Emirates (UAE). After the analysis of the case study some of the major factors highlighted as crucial for the success of knowledge retention are: culture, organizational structure, configuration management, publicity and marketing, training, IT system with ability to capture multiple formats, and reward and recognition. Although, this paper presents the model for construction sector it can easily be adopted for other sectors.

Keywords: knowledge management, knowledge retention, knowledge retrieval, organizational culture.

INTRODUCTION

Retention of both the workforce and the knowledge they possess is a challenge. People retire, find better jobs, or take a break from work, and what leaves with them is their knowledge. With the ongoing globalization, and competition, organizations quite regularly poach on workforces of each other. With better offers from competition, it is not easy to hold on to your workforce, and that is a fact one has to live with. However, the blow of losing the employee might be softened a little bit, if the knowledge of the departing employee is retained. This paper presents a case study of construction consultancy in the UAE, which throws light on practices that can potentially help retain some knowledge in the organization. The following section discusses a framework to assess processes that constitute a knowledge retention system. The paper then discusses this case study from construction consultancy in the UAE. It is followed by a section that analyses the case and presents some best practices. The last section summarizes the findings and concluding remarks of the case study.

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BACKGROUND AND LITERATURE REVIEW

Alom (2007) has developed a model to assess knowledge retention in an organization. It comprises four steps; Socialization, Codification, Combination and Internalization.

The first step involves socialization and sharing knowledge at individual level. Individuals are important not only because they themselves, are a source of retained information, but also because they largely determine what information will be acquired and then retrieved from other's memory. Nonaka (1994) argue that knowledge in an organization is created at an individual level. Walsh and Ungson (1991) consider individuals as an excellent starting point for examining information acquisition, retention and retrieval processes. According to Mckenna (2006) there are two types of knowledge; one tacit and the other explicit. Tacit knowledge is composed of an accumulation of experience in the form of insight and wisdom, which the person may have difficulty in communicating to others but can easily utilize in the performance of a particular task. By contrast, the explicit knowledge lends itself to codification or classification and can easily be expressed. "The explicit knowledge created, should be a strong reflection of best practice within the alliance group, should exhibit shared ownership, and should be able to be easily understood outside its linguistic, organizational and cultural context" (Rice and Rice, 2005). Some of the factors that contribute to sharing tacit knowledge within an organization are teamwork (Nonaka, 1994) and face to face communication (McManus *et al.*, 2003). Bender and Fish (2000) argue that an individual builds his or her own knowledge by transforming and enriching information, and they defined knowledge as what the individual transforms information into by incorporating personal experience. They suggested knowledge hierarchy (a knowledge creation process) where individuals receive the knowledge from other sources (other individuals, books,..) in the form of data, and by that time the process begins as the recipient of the data adds meaning to transpose the data into information, then enriches the received information with his or her personal application. In this sense, people can transfer data or information, but the knowledge itself has to be created in the head of the individual. Renewing knowledge is another concept that comes from sharing the knowledge. New knowledge is created by people who share and transfer their knowledge and expertise throughout the organization from individual to individual, individual to a team or group, team or group to individual, or team or group to team or group (Bender and Fish 2000). Syed-Ikhsan and Rowland (2004) argue that Knowledge transfer requires the willingness of a group or individual to work with others and share knowledge to their mutual benefit. So the effectiveness of a knowledge retention system rests very strongly on how willing people are to socialize and how the organization facilitates the process of socialization.

The second step in the knowledge retention process is called codification, where the tacit knowledge is converted into explicit knowledge. Patel *et al.* (2000) define explicit Knowledge as the most common type of knowledge. It is 'readily available' and can be codified and structured in a way that makes it easily transmissible. It is the kind of knowledge that is recorded, and allows people to find it and use it. It can be found in a range of diverse sources, such as human resources data, meeting minutes and the Internet. They define tacit knowledge as being hard to articulate with formal language as it is personal knowledge embedded in individual experience and involves intangible factors such as personal belief, perspectives, and values. Rice and Rice (2005) argue that in order to effectively capture the tacit knowledge into explicit form, creative and varied range of compilation and storage systems are vital. What is really

important is to capture tacit knowledge in an explicit form without losing the context. We do accept that not every piece of tacit knowledge can be converted into explicit form, and we might not be able to do much about it. But what we can do, is to maximize the conversion as much as we can. One thing we can do to enhance the efficiency of knowledge capture is to capture it in multiple formats. Some knowledge might be more effectively captured if it is stored in the form of video or voice of the owner of the knowledge, and maybe converting it into a text file will result in loss of some of the context of the knowledge. So the conversion from tacit to explicit form should not be just in the form of a text file but should have multiple types of files that can potentially add context to the knowledge.

The third step is the process of combination. In this process the knowledge is captured into organizational memory. In order to construct an organizational memory we need to first understand the roles it plays. According to Walsh and Ungson (1991) a consideration of organizational memory reveals that it plays three important roles within the organization. First, it plays an informational role; the information content that is housed in memory's retention facilities can contribute to efficient and effective decision making. Second, organizational memory fulfils a control function; it can reduce the transaction costs that are often associated with the implementation of a new decision. Third, organizational memory can play a political role. Walsh and Ungson (1991) suggest five storage bins for retention facilities; individuals, culture, structure, transformation and ecology. McManus *et al.* (2003), argue that the knowledge must be arranged in an organized coherent or systematic form, and that the determination of how to properly package the knowledge so that it can be available when and where needed based on necessity, is critical. Future knowledge in the form of data and information can be stored in a variety of ways with access for all employees. It is also transferred in various ways such as e-mail, groupware, Internet, intranet, and videoconferencing. In this sense, information technology should be seen as a necessary tool, but technology and its use is not in itself knowledge management or indeed knowledge transfer (Bender and Fish, 2000).

The fourth step in the knowledge retention process is knowledge retrieval. Walsh and Ungson (1991), state that there are two concerns of knowledge retrieval. The first is the kind of events or circumstances that trigger the controlled search for information from memory. The second is how the various organizational attributes moderate the response to such triggering stimuli. At the organizational level, one example of automatic retrieval occurs when present behaviours are based on previous practices and procedures that have been shared and encoded in transformations, role structure, culture, and workplace ecology. Gammelgaard and Ritter (2005) argue that the retrieval consists of search and decoding processes. Search is the process by which retained information is selected as relevant to a particular problem or goal. Decoding is the reconstruction of the selected information to satisfy the user's request. It is, therefore, useful to divide the retrieval process into two steps: the identification of knowledge, and the receivers' individual decodification of the accessed knowledge. The filtering of particular information from memory that supports a particular agenda can serve as a means to enhance and sustain power (Walsh and Ungson, 1991). The knowledge management system must incorporate the ability to adapt to new knowledge so that it can be refreshed (McManus *et al.*, 2003). The retrieved knowledge will be updated by the user and the updated knowledge has to be again captured into the system. The four steps are shown in (Table 1). Based on these four steps of knowledge retrieval process, we can specify four levels that indicate the

maturity of an organization in knowledge retention. The four levels and their characteristics are specified in Table 1. The four levels are.

Level I: Knowledge is shared amongst the organization employee.

Level II: Shared knowledge is documented (transferred from tacit to explicit).

Level III: Documented knowledge is stored.

Level IV: Stored knowledge is accessible, can be retrieved and used easily.

In this paper this framework is used to present three case studies of multinational construction consultancies in the UAE. Since these are multinational companies, they have maintained similar processes worldwide. Therefore, the practices highlighted in these studies cannot be limited to just the UAE, and it would be appropriate to generalize the findings. The next section describes the methodology used for collecting data for compiling these case studies. This section is followed by the section containing the three cases.

METHOD

In order to capture the knowledge retention practices the framework described in the previous section was applied to a large multinational construction consultancy firm in the UAE. The method of data collection was semi-structured interview. As Fellows and Liu (2003) argued, semi-structured interviews fill the spectrum between the structured and the unstructured extremes. The purpose of doing the interview is to get a wider picture and more detailed information about the knowledge sharing process and practices. Moreover, it allows for non-verbal communication or body language which has an impact on the responses. Three people were interviewed in the selected organization. Out of the three employees in our participating organization, one was the regional manager, and the other two employees were design engineers. As part of the study, we also elicited the views of 30 employees from the selected organization. Although the data from the survey are reported elsewhere, the views from the respondents of the questionnaires corroborate the views from the three interviewees. The interviews took place in each employee's office. Although there were no time constraints, it took between 45 minutes and one hour to complete the interviews. Each participant was apprized of the relevance of the study and the structure of the knowledge retention model. All of them were also provided with printouts of Table 1. This was done in order for the respondents to put their thoughts in the context of the model.

THE CASE STUDY

The case study involves a consultancy firm or company specializing in planning, design and management services for infrastructure development. It employs 6000 people in more than 70 countries, 1200 of them are based in the Middle East region and 900 in UAE.

This company encourages communication both formal and informal within a department, but to communicate with other departments, one has to go through their line manager. Formal departmental and project meetings are minuted and circulated among all participants. The major process or system improvement initiatives are let by higher level management. There is a knowledge management system that has information on global best practices, lessons learnt, and technical standards. But very few people in the UAE were aware of the existence of this system. The current system is primarily driven and maintained by the UK office of the organization.

Although, other offices have access to this system, they know very little about it. Practices like job rotation do not exist. But employees are often seconded to other locations for short periods of time. Each employee gets to attend one training programme a year on technical issues. Several in-house training programmes for management skills improvement are available through an in-house e-learning system.

Table 1: Levels of Knowledge Retention in an Organization

Requirements	Level I Shared at Individual level	Level II Codified/ Documented	Level III Stored / retained	Level IV Retrieved/Used
Face-to-face communication Meetings (formal and informal) (Nonaka andTakeuchi 1995)	How often meetings are held?	Are they minuted?	Are they stored? If yes, where?	Are they accessible? Is it retrievable?
Sharing thinking process: brain storming session (Nonaka 1994)	How are problem solved?(individually/ collectively)	Are the problems and solutions recorded?	Is it stored? If yes, where?	Is it accessible? Is it retrievable?
Lessons learnt (at the end of project phases, or at the handing over?	Is the project problems discussed at the end?	Are those lessons learnt documented?	Where is it stored?	Are people aware of its existence?
Job rotation (between different branches in different cities and countries) (Bender and Fish 2000)	Does the org. support job rotation system?	N/A	N/A	N/A
Renewing Knowledge (Bender and Fish 2000)	Is the retrieved knowledge discussed before using?	Are the feedback / new knowledge documented?	Is the stored knowledge updated?	Is the updated knowledge accessible?
Self organized teams (Nonaka 1994)	Do they exist? Is trust among employees Built?	Is the created knowledge and ideas documented?	Is it stored? If yes, where and how?	Is it accessible? Do people know how to retrieve it?
Training and Coaching System	Are trainings held regularly?	Are the trainings / new knowledge documented?	Are they stored? If yes, where and how?	Is training manual accessible for all employees?
Competition and award System	Is there is any award for knowledge sharing?	Is there any award for documenting knowledge?	Is there a system allows people to store documents?	Is it accessible? Is it retrievable?

Moreover, this company has an extensive intranet based knowledge management system with seven components. The first component is the news and bulletin board, where the monthly employee magazine for the company is placed in soft form. There is one more monthly magazine which has articles and updates on project progress and client relations. This magazine is also available on in this section. The second component of this system is the client information section. In this section, information regarding all the existing clients and a history of past and present projects is stored. The third component has information about the organizational structure, vision, mission, and business principles of organization. This component also has the overall organizational structure as well as organizational structure of its five business groups. Under each business group there is information about business development, management, resources, skill groups, training, finance and operation. The fourth

component is the business development system. This section has information on past bids and a bidding support system that helps employees prepare bids for new projects. The fifth component of this system is the employee operational resources repository. This section has guidance and operating principles of the company in the areas of procurement, dispute resolution, expert witness, legal agreements, company statistics, and health and safety guidelines. This component of the system also has lessons learnt system where employees can enter new practices and experiences. This component also has an e-library which has several e-books and reports. The e-learning system described earlier is also a part of this component. The sixth component is the business systems component. Parts of this system have restricted access. This section contains the commission management system which has comprehensive profit and earnings statement for senior management to access and evaluate. This also has information on legal contracts and overview of legal clauses under different kinds of existing contracts. This system also provides facilities utilization information with layouts of all the office spaces. The last component of the system is called the people system. This section contains employee CVs with information about their specific skills, specializations, location etc. This component also has information on job openings, and recruitment, staff surveys, training programme based information and HR procedures.

Table 2: Summarizing the analysis of the case study

Criteria	Case study (Organization)
Culture	IT system is planned and being implemented but ctivities and events that encourage knowledge sharing and the eventual retention don't exist
Reward and recognition for knowledge sharing	No such reward and recognition exists
Ability to capture knowledge in multiple formats, potentially providing opportunity to capture content and context	The IT systems supporting knowledge management in the organization has this capability either implemented or planned to be implemented
Training on IT system supporting knowledge retention	The IT system is fully implemented, yet no training is provided for employees to use the system
Publicity and Marketing	No such publicity or marketing of the knowledge sharing, retention and management was observed
Configuration Management	No corporate level configuration management system exists at the moment
Organizational Structure	Organization analyses had a relatively flat organizational structure.

Based on our discussions with employees we found out that although this system is quite elaborate and extensive; still people do not use it that often. Especially when it comes to the lessons learnt part of the system, not many people use it and update it with their own experiences. Multiple people posting their experiences on the system might use different keywords as there is no monitoring or protocol for the system. There is no training programme available for employees to explain the benefits, and functionality of the system, so most of the employees learn it as they go. There is no incentive or programme that encourages the use of this system either. One of the managers we interviewed did accept that they are aware of the sparse usage of the system and are looking at ways to improve the usage. This system can be rated between levels two and three of our framework, as not all the knowledge that can be stored is being stored and the usage is quite limited.

DISCUSSION AND ANALYSIS

Table 2 presents a summary of the analysis of the case study presented in this paper. The first column highlights the major criteria used for analysis and the results of the analysis of the case study is presented in the cell of the corresponding row.

It can be seen that the company under study has a technology platform that is fully operational. However, the usage is quite infrequent due to lack of any training programme. It is very important to have awareness campaigns to highlight the benefits of knowledge sharing leading to organizational knowledge retention and training for people on how to use the available technology platform to share their knowledge as well as use knowledge from the past.

With tight work and project deadlines, and the time involved in documenting, saving and retrieving knowledge it is often possible that employees will overlook the knowledge retention system. Therefore, it is important that top management be committed to the knowledge retention process and have budgetary provisions for charging the time involved in using and updating the system. Management also needs to encourage employees to use the system more frequently and effectively. Initiatives like emails sent to employees, discussion of knowledge retention system in staff meetings, posters and publicity material about the system placed all over the facility could be some of the initiatives that top management can contribute in and encourage knowledge retention in the organization.

One more issue involved with knowledge retention system is the configuration management. The archiving system needs to have a numbering policy or system in place that archives the files in some sort of chronological order. The other major configuration related issue is the use of keywords, and cataloguing. There needs to be some way to ensure that two people saving knowledge about same issue catalogue it under the same keyword so that future retrieval is easy. In order to ensure that steps like having an administrator for the system monitoring the new entries or a list of keywords in a database is important and will contribute to configuration management and proper cataloguing.

The impact of organizational structure on knowledge retention, can be complex especially when organizational structure can be operational into centralization (extent to which authority and decision making is concentrated at the top), complexity (number of occupational specialization and task differentiation), stratification (number of status, layers, or levels), and formalization (degree of emphasis placed on following rules and procedures in role performance). In our study evidence suggests that the level of centralization is low allowing for greater ease in knowledge retention at the unit level. However, for this knowledge retention to be organization wide, the importance of supporting IT system becomes paramount. But in order to take full advantage of this IT system knowledge in its tacit form cannot be used. Conversion to explicit form is an absolute pre-requisite.

It is to be mentioned here that the case study analysed is regional office of big organization, and the level of occupational specializations and task differentiation (i.e. engineers, architects, designers) was low hence the impact that task differentiation could have made was minimal. However, it is an issue worthy of note and future in-depth analysis. Olomolaiye (2007) has shown that high levels of task differentiation and occupational specialization could impact negatively on knowledge sharing and retention. Same could be said of organizational stratification. Although the case

analyzed in this study showed a low level of organizational stratification, further analysis of highly vertical organization is needed for future research. In addition, our study indicates that the degree of emphasis placed on following rules and procedures is low to medium therefore, the probability of success in knowledge retention is higher (Olomolaiye, 2007).

LESSONS LEARNT FOR FUTURE RESEARCHES

This research has analysed a case in order to assess the applicability of a knowledge retention model. It would be interesting for future researchers to look at the acceptability of these knowledge retention processes and IT system, and analyse the drivers and barriers from the users perspective. It would also beneficial to document tangible benefits of these systems and ways of measuring those. This documentation of benefits could also be used for making business cases for investments by organizations in knowledge retention systems. In this paper we have documented some issues highlighting the relationship between the softer, social and technological elements for a knowledge retention system. However, significant research is needed which adopts a multi-methodological approach in studying the complexity inherent in this interplay.

CONCLUDING REMARKS

The goal of this research paper was to analyze knowledge retention practices and suggest drivers for knowledge retention. In order to analyze the knowledge retention practices a model developed by Alom (2007) was used as a framework. This model has four step knowledge retention process. The first step is sharing of tacit knowledge between individuals and groups. The second step is the conversion of tacit knowledge into explicit knowledge. The third step was the storage of this knowledge and the last step was the retrieval and update of the knowledge. The framework also defines four levels of maturity of an organization. The level one of the maturity is when the knowledge is shared amongst the organization employee. The second level is when the shared knowledge is documented (transferred from tacit to explicit). The third level is when the documented knowledge is stored, and the fourth level of maturity is when the stored knowledge is accessible, can be retrieved and used easily.

Based on the framework, a case study of construction consultancies in the UAE was analysed. Based on the analysis of the knowledge retention system the major drivers for its successful implementation are prevalence of a culture of sharing knowledge, reward and recognition for sharing knowledge, a technology platform that can accommodate multi formats of files, awareness of knowledge retention system and its benefits among its employees, and top management support. Although this list of drivers is not exhaustive, future research and additional analysis more drivers will be highlighted. But still, this paper has made some significant observations that can be used to take the research in the area of knowledge retention forward.

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