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Fighting Organisational Amnesia: A conceptual framework to investigate knowledge retention and learning practices in Australian construction organisations

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Abstract

This paper reports on in-progress research being undertaken at RMIT University, Melbourne Australia. In knowledge economy of today, the best strategy for construction organisations in Australia to become competitive and innovative is to enhance the management and utilisation of knowledge. In project environments such as the construction industry, it is highly desirable that knowledge and lessons learnt be captured from one project and are effectively integrated in organisational learning processes so that they can applied on subsequent projects. Failure to do so causes "Organisational Amnesia". This leads to the 'wheel being reinvented, repetition of mistakes and poor decision making causing reduced productivity and large expenses that cost whole Australian community. This research aims to investigate the current practices of Australian construction organisations regarding management of knowledge and identify the factors that cause organisational Amnesia. This would be helpful in developing strategies to improve the retention of knowledge and learning from past projects.

Keywords

Learning, Knowledge Management, Innovation, Organisational Amnesia, Construction

1.0 Introduction

Knowledge is being recognised as a vital resource and source of competitive advantage in today's dynamic and changing business environment (Burton-Jones, 1999). The knowledge revolution in the last decade has set the foundation for knowledge economy and it is becoming far more complex and involved. In order to gain a competitive advantage, knowledge and understanding is becoming far more important than data and information.

Murray and Langford (2003) report that construction industry leaders and governments have expressed, through various construction industry reports, the need for the industry to become more innovative and provide greater value for money through instilling learning in their organisations. The construction industry must accept the challenge to change and modernise if it is to match the performance of industries that generate higher profits and can more easily attract high-calibre talent (DETR 1998).

Australia's construction organisations generally do not manage knowledge well and often fail to learn from experience and knowledge gained on projects (Walker 2004; Maqsood 2006). With Australia's aim to be recognised as one of knowledge based economies of the modern world, all contributing industries have to devise strategies to consider knowledge as a resource and manage it well to the utmost benefit of the industry and hence economy. In project environments such as the construction industry, it is highly desirable that lessons learnt captured from one project are put into use on subsequent projects, in order to avoid reinventing

of the wheel, repetition of the mistakes and poor decisions. This will help in achieving reduction in project times and subsequent efficiencies (Kamara *et al.* 2002).

Due to this project nature of the construction industry, it poses special challenges and problems to the process of capturing and documenting knowledge from completed projects and made it available for others to share and use on next projects. This becomes evident when same mistakes and process of poor decision-making are repeated time and again. It leads to reduced productivity and increased cost of the projects. This can be avoided by carefully investigating the related current knowledge related practices of the construction organisations, identifying the factors that act as barriers and devising strategies and framework to improve the work practices. A few studies such as by Walker (2004) and Maqsood (2006) have highlighted that the above mentioned aspect of project management needs significant improvement in Australian construction organisations. These studies are, however, limited in explaining the barriers in adequate details. It is hence worthwhile to investigate in greater depth, the current practice of capturing, preserving and utilising knowledge (and lessons learnt) from past projects in Australian construction organisations.

2.0 Organisational Learning and a Learning Organisation

Learning is generally associated with better outcomes. Having learnt lessons avoids 'reinventing the wheel' and 'making the same mistakes again'. Argyris and Schön (1978) and Senge (1990) introduce the idea of single loop learning and double loop learning, organisational learning and the learning organisation.

Organisational learning is the set of processes used to obtain and apply new knowledge, behaviour, tools and values (Bennis and Manus 1985). Through this process, members of the organisation detect errors or anomalies and correct them by restructuring the current organisational model (Argyris and Schön, 1978). Organisational learning is a collective process of inquiry and experimentation that uses groups as a forum to help employees draw new meanings from their paste experience (Cavaleri et al. 2005). This results in improved actions through better knowledge and understanding. It is the process of information leading to changes in a range of potential behaviours (Huber 1991).

Learning is so insinuated in the fabric of life that you cannot *not* learn (Senge 1990). Pedlar *et al.* (1991) agrees, observing that an organisation can facilitate the learning of all its members and so continuously transform itself. Such an organisation has the skills to create, acquire and transfer knowledge, and then modifies its behaviour to reflect new knowledge and insights (Gravin 1993). In resolving the discrepancy between terms of 'organisational learning' and 'learning organisation', Love et al. (2000) state that organisational learning is used mainly as a descriptive term to explain and quantify learning activities and events. The 'learning organisation' tends to refer to organisations designed to enable learning and having an organisational structure with the capability to facilitate learning. Mirvis (1996) notes that the learning organisation focuses on managing chaos and indeterminacy, flattening hierarchies, and decentralization. It also encourages the empowerment of people, teamwork and cross-functional teams, network relationships, adoption of new technologies and new forms of leadership and mentoring.

3.0 The role of Knowledge Management (KM)

KM has gained attention in the last eight years in the construction industry. Effective management of knowledge in the construction industry is likely to produce innovation, reduce project time, improve quality and customer satisfaction (Kamara *et al.* 2002; Love *et al.* 2003). Through the process of KM, the exploitation of an organisation's intangible assets creates value and knowledge both internally and industry wide (Snowden 1999; Davenport and Prusak 2000; Liebowitz and Megbolugbe 2003). In the project environment, KM assists project managers to improve communications within teams. It also provides informed knowledge to the project manager and project teams. KM ensures better sharing of best practice documents, lessons

learned, project management and system engineering methodologies, and review and document the rationale for strategic decision-making (Liebowitz and Megbolugbe 2003). Failure to capture and transfer project knowledge leads to an increased risk of 'reinventing the wheel', wasted activity, and impaired project performance (Siemieniuch and Sinclair 1999). These potential benefits of KM are convincing enough for the construction organisations to venture into adopting its principles.

A successful KM initiative installs learning and facilitates knowledge-sharing culture and environment, provides vision and effective leadership to overcome learning barriers. This will help an organisation to be transformed into a learning organisation that is open to learn new techniques and continuously changes itself based on learned knowledge. This change increases the absorptive capacity of the organisation, which is a function of how organisations retain and distribute knowledge internally to practically exercise KM (Cohen and Levinthal 1989; Cohen and Levinthal 1990). Furthermore, prior knowledge of particular knowledge domains tends to make it easier to understand new knowledge (Burton-Jones 1999). It enables organisations to recognise the value of new information, assimilate it and apply it to commercial ends (Cohen and Levinthal 1990). Liebowitz and Megbolugbe (2003) observe that with the creation and capture of knowledge, learning takes place and knowledge is applied and embedded within individual and organisational processes. Organisations may learn effectively from the experiences and utilise them efficiently.

It is clear from the above discussion that the concept of organisational learning and that of learning organisations is not very different from KM. Newcombe (1999) notes that a parent organisation will not learn from their projects if they do not have in place the mechanisms to capture knowledge. For learning to occur, there is need for processes and structure to be in place to help people create new knowledge, allowing them to continuously improve themselves and the organisation (Love *et al.* 2000). Love *et al.* (2000) also note that currently there is no defined road map for construction organisations to follow if the learning organisation is its destination. They have quoted Gravin (1993) as identifying the following five activities that a learning organisation in construction should be skilled at:

- Systematic Problem Solving
- Experimentation with new approaches
- Learning from their own experiences and past history
- Learning from the experiences and best practice of others
- Transferring knowledge quickly and efficiently through out the organisation

Cavaleri et *al.* (2005, p215) argue that knowledge is assumed to be product of organisational learning processes, but many current organisational learning processes have not been aligned with knowledge processes in a pragmatic way. Pragmatic knowledge is the ultimate action knowledge because it is continually being customised and upgraded based on the effectiveness of action taken in producing expected results (p31). The aim and vision is to become a learning organization but methods for realising this vision have typically been so vague that many mangers consider it more of an intellectual exercise than tangible way to contribute to business performance. They propose the simplest way to achieve this vision is to integrate organisational learning process with KM initiatives.

Maqsood (2006) discusses the link between KM, learning organisation and Innovation in Figure 1. KM initiative causes people in the organisations and hence organisation as a whole to learn as it carries out its processes of capturing, sharing, transferring of knowledge. This continuous cycle of learning helps achieve the organisations a vision of being considered as a "Learning Organisation' where only change is constant. Such an organisation will be continually challenging their output and outcomes resulting in continual change and innovation.
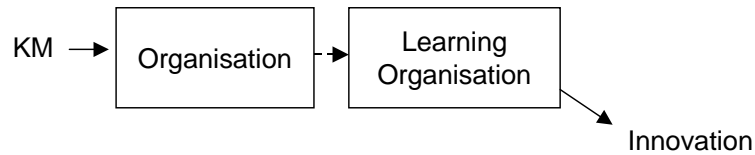
Figure 1: Link between KM, learning organisation and Innovation

Hence innovation is linked to the output of a learning organisation. This can help such organisations to improve their capabilities and successful maintain their competitive advantage.

4.0 Challenge of Project Learning

In project environments such as the construction industry, it is highly desirable that lessons learnt captured from one project are put into use on subsequent projects, achieving reduction in project times and subsequent efficiencies (Kamara et *al.* 2002). Construction organisations usually develop project histories and databases as repositories to keep such knowledge of the lessons learnt. KM provides a structured way for developing such repositories and ensures that knowledge is disseminated in a timely fashion to the users. Where project histories have been captured, their details are obtained through using a variety of debriefing techniques. Schindler and Eppler (2003) classified these techniques into process-based methods, and documentation-based methods.

Table 1: Schindler and Eppler (2003) classification of methods of knowledge documentation

Process-based Methods (after Project is finished)	Document-based Methods (on on-going basis)
Project Review/Project Audit Post control Post-project Appraisal After Action Review	Micro Article Learning Histories

5.0 Project Learning Barriers

The project nature of the industry poses great challenge and barriers to the project learning. Schindler and Eppler (2003) explain the nature of these barriers as:

- Experience gained while solving a problem during the course of project is not adequately transferred to other people, when this is not a part of project's documentation practice. People complete the task and take any learning along with them to new teams.
- Relevant project documentation such as a feasibility study, a summary, a technical report etc is only produced superficially and provides only business figures or the projects results. They don't capture or records reasons for failures or how certain problem was resolved.
- The end of the project marks the end of the learning of whole team. Limited debriefing of the completed project occurs at the end of the project. It is because the team is disbanded and sent onto new projects. Organisational amnesia starts to happen if these team members are not going to use that knowledge that they acquired from previous project again on a new project.

6.0 Developing and Maintaining Project Histories

Project Histories are essentially the databases containing information from past projects. Maqsood (2006) investigated the issues related with the development and deployment of project histories in one of the Australian Construction Organisation. He provides the following guideline to improve the process of creating and using project histories:

1. Senior management buy-in and development of a corporate-level implementation strategy at for the creation and use of project histories—appropriate leadership is required to bring this change;
2. Deciding on a framework to signify what is the important information and knowledge that should be captured or preserved from the current projects;
3. Deciding upon a user friendly and effective format of the project histories;
4. Deciding upon who should be gathering the required information and knowledge and who should be creating and developing project histories—this would involve investigating an option for staffing an organisational KM function to implement such responsibilities;
5. Investigating current technology available in the market to create and develop project histories and how their efficiencies could be compared with technology currently being used within the organisation; and
6. Once project histories become operational, monitoring and controlling their operation should become an embedded process. A KM organisational function should take up this responsibility.

7.0 Data Warehouse: A robust tool for the development of Project Histories

Data Warehouse is increasingly becoming a choice of various business corporations as a dominant technology of developing user friendly and effective data bases as advocated by Maqsood (2006). As opposed to traditional database systems which are usually referred to as O*n-line Transaction Processing (OLTP)* systems and are not very good at answering *what-if*, *why*, and *what-next* type questions (Ahmad and Azhar 2002), data warehouse is combination of multiple databases and run the search and queries in a very user friendly way to answer what-if, why, and what-next type questions.

Ahmad and Azhar (2005) describe that a typical data warehouse has three components or tiers:

1. Data acquisition tools (back end) that extract data from transactional databases (i.e. OLTP systems) and external sources, consolidate and summarize the data, and load it into the data warehouse.
2. Associated software for managing the data. (Maintained with the data in the warehouse itself)
3. The client (front end) software that enables users to access and analyse data in the warehouse.

Due to user-friendliness and ease of knowledge search, data warehouse can be recommended as more efficient tool of developing project histories rather than simple databases.

8.0 A conceptual framework to study organisational Amnesia

The foregoing set the background and rationale for taking up this research project. Following are various aims and objectives for the project.

1. To investigate the current practices that major construction organisations in Melbourne, Australia undertake to utilise knowledge gained from previous projects.
2. To understand and explore the mechanism by which the knowledge learned in the project environment is integrated and made part of the organisational memory.

3. To investigate the factors, circumstances and events that may cause organisational amnesia.
4. To suggest strategies and frameworks for improving knowledge retention and Learning in construction organisations
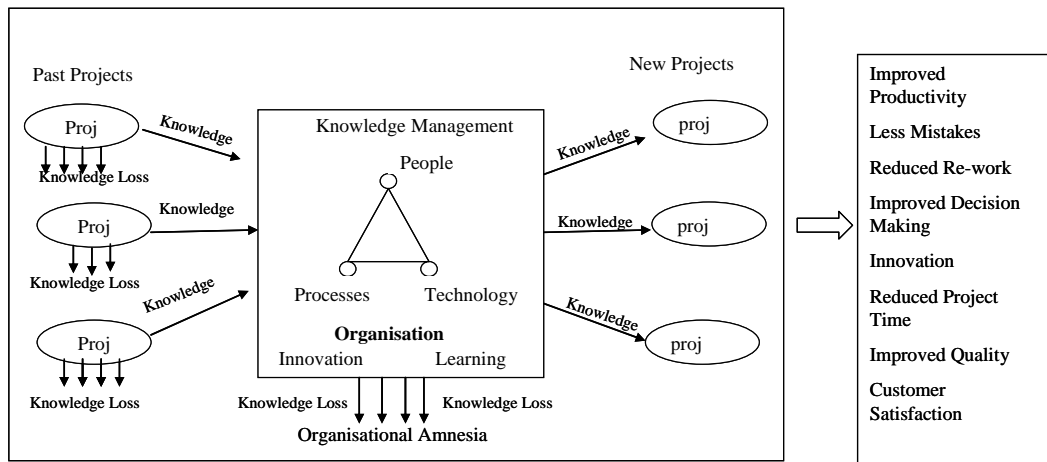

Figure 2: A conceptual framework illustrating Organisational Amnesia

Figure 2 illustrates the mechanism by which the project knowledge dissipates during the process of transferring from a project to organisation itself and while some of the knowledge does reach the organisation, it is again lost because of non-use or non-availability to other projects contributing to 'Organisational Amnesia'. This research is set to investigate the factors that cause this organisational amnesia.

Conclusion

The managing of knowledge is becoming increasingly important for Australians construction organisations as Australia aims to be recognised as a knowledge based economy. The emphasis on knowledge by the construction organisation will help achieve innovation and improved productivity levels by ensuring that lessons learnt and knowledge gained on past projects is effectively transferred to the new projects. The construction organisation have to devise strategies to fight against organisational amnesia that may happen when knowledge gets lost during the transfer process from project to organisation and also from the organisation itself when its is not available for use. This research project would help to develop an increased understanding of the nature of organisational amnesia. An expected outcome of the study is as follows:

1. An increased understanding of the current practices of knowledge gain and use from past projects in construction organisations in Melbourne, Australia.
2. Identification of various factors that acts as barrier and restrict the flow of knowledge (lesson learnt) from the project back to the organisation.
3. Map out the process of Organisation Amnesia as organisations lose key knowledge from completed projects.
4. Various strategies and framework to overcome the problem and facilitating the knowledge gain, use and sharing thus improving organisations memory and causing organisational learning. This will add to the efforts of the organisation towards becoming a learning organisation.
5. It is hoped the study would be able to make some initial impact on various construction organisations that would continue later and reflect back in the improvement of their working practices.

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