

Implementation of Knowledge Management Processes and Practices in Construction Industry



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Definitions

Awad and Ghaziri (2008:28) identified sixteen alternative definitions of Knowledge Management (KM) provided by various writers and organisations. Therefore, it is evident that there is no universal definition for KM.

The Oxford Advances Learner's Dictionary defines 'process' as:

'a series of actions or tasks performed in order to do, make or achieve something.'

The same defines 'practice' as:

'the actual doing of something; action as contrasted with idea.'

For the purpose of this article, 'KM processes and practices' are defined as 'processes and practices designed to identify, capture, structure, value, leverage and share knowledge' and this definition of KM was adapted from a definition given in businessdictionary.com.

KM in Construction Industry

Introduction

A client investing in a construction project expects the project to be completed on time, with specified quality and at agreed cost (or agreed budget). However, the general perception of the industry is that most projects fail to achieve these project objectives due to various reasons. Egan (1998: 7) admits the unpredictability of projects in terms of delivery on time, to be within budget and to the standards of the quality expected.

Construction industry is predominantly a project based industry. The construction industry and construction projects traditionally operated in an adversarial manner. The design was done by the Architect and other consultants and the contractors were expected to construct on site what

was designed as aforesaid. The contractors were selected using the traditional procurement system generally on a project by project basis and in turn the contractors selected the sub-contractors also on the same basis. The whole process consisted of transactional episodes and the parties were attempting to maximize their own profit at the expense of the others. The goodwill, trust and co-operation between the parties were minimal. Due to the transactional nature of the industry, opportunities for repeat business were less. The traditional way the construction industry operated provided less incentive / opportunity for the industry to continuously learn from the process, build relationships, the integration of skills and innovation. The clients are generally dissatisfied as the projects fail to achieve their objectives in terms of time, cost and quality. This sequential nature and the culture of the industry identified above acted as a barrier to use the skill and knowledge of suppliers and contractors in the design and planning of the projects. The knowledge gained on many project were lost due to break down of the project team once a project was complete.

Egan report (1998) prepared with a view to investigate the extent to which the quality and efficiency in UK construction could be improved by re-engineering the construction process, suggested that the construction industry has to learn to do the things differently and believed that the industry has to rethink the process through which it delivers the projects in order to achieve continuous improvement in its performance and products.

The report further identified that contrary to the common view that every project is unique, products such as houses are repeat products. Moreover, the process of construction itself is repeated from project to project and these products and the processes can be repeatedly improved.

Therefore, Egan report recommended that the industry should create an integrated project process around the four key elements of product development, project implementation, partnering the supply chain and production of components. It defines integrated project process as 'a process that utilizes the full construction team, bringing the skills of all the participants to bear on delivering to the client and is explicit and transparent, and therefore easily understood by the participants and their clients.'

A key requirement of this process is that teams of designers, contractors and suppliers work together through a series of projects, continuously developing the products and the supply chain, eliminating waste in the delivery process, innovating and learning from experience. It emphasizes that both the clients and industry must change.

Egan further recommends that the construction industry requires substantial changes in its culture and structure in order to achieve its full potential. The recommendations include building long term relationships based on trust, sustained improvement in quality, good human relations practices and sharing learning etc.

Proper implementation of Egan's recommendations involves challenging the status quo in the construction industry. However, this will enable the industry to integrate the untapped capabilities of their intellectual capital and to provide innovative solutions by managing their knowledge to satisfy the client's demands whilst gaining competitive advantage.

Latham (2006: vii) states that 'lessons learned on many construction projects are often lost at the end of a project and the parties move on to new projects.' He further states that post project reviews carried out to capture the lessons learned are usually carried out in a haphazard and untimely manner and without providing sufficient time. Therefore, Latham (2006: vii) proposes that KM is essential for improving the project delivery system.

Challenges/Problems Associated with the Implementation of KM Processes and Practices in Construction Industry

Carrillo et al. (2000) identified that the barriers/problems to successfully implement KM within a construction enterprise include:

- 1) Lack of time
Construction projects always work on tight deadlines. KM requires additional efforts that may be considered by the project staff as less important within a tight construction programme.
- 2) Trying to solve large problems
KM involves various complex stages. It is easy to implement KM as small projects in practice. Instead organizations attempt to tackle it at a large scale.

However, Awad and Ghaziri (2008:37) have reservations on this approach and state that 'a company should start with a strategy and a champion, with a focus on a worthwhile, high profile project that can set the tone for the rest of the organization.'

Therefore, combining both the views it can be said that it is important to have a strategy and to select an appropriate project to start with to suit its circumstances when KM processes and practices are implemented by a company.

- 3) Converting knowledge
Traditionally construction industry has a culture which does not promote knowledge sharing. KM in a project environment requires capturing the knowledge of employees from different organizations and converting their tacit knowledge into explicit knowledge within a reasonable period at an acceptable cost, which is a difficult task.
- 4) Large number of small to medium enterprise (SMEs)
For SMEs, KM is of less concern as they have other pressing concerns. They also have no commitment or resources to undertake KM.
- 5) Multi-Disciplinary teams
Project teams involve multi-disciplinary teams from different organizations or divisions, who work towards the agenda, set by the organization or division. KM within such a team in a project of short duration is difficult.
- 6) Unique projects
Traditional view of construction industry is that it comprises of unique projects even though attempts are made recently to identify the common processes within projects. People having unique project views

are of the opinion that KM in a project will be wasted as the next project may be quite different.

7) Lack of learning

The unwillingness of people to learn from past mistakes having the view that projects are unique and therefore attempting to learn from past mistakes is futile.

8) Lengthy time period

KM is long term and takes time to reap its benefits and to reflect the effectiveness in the organizational performance.

9) Loss of faith

Even though KM is a long term process employees may expect immediate benefits from a KM system and may lose faith when it is not happening.

10) Information Technology support

Many KM systems rely on Information Technology. Connecting construction project offices which may be of temporary portacabins located in isolated environments with inadequate infrastructure can be a barrier in implementing KM.

As identified above the traditional culture of the construction industry having an adversarial nature, sequential nature and traditional procurement systems as integral parts of the culture provides very less incentive / opportunity for the industry to continuously learn from the process, build relationships, the integration of skills and innovation and therefore does not promote KM.

Anumba et al. (2006: 216) identify some mechanisms / solutions that can address these problems as follows:

- 1) Establish the KM problem prior to investing in KM processes and practices
- 2) Establish the characteristics of knowledge that needs to be managed as these have implications on the approach to be adopted
- 3) Assess organizational culture and take steps to move towards a sharing culture if the current culture is an authoritative one
- 4) Identify the location knowledge is required to be managed and the constraints involved when devising KM processes and practices
- 5) Establish how the knowledge is to be acquired (formal courses or by informal interaction between knowledge owners)

6) Identify and involve all stakeholders who may be affected by a KM initiative

7) Select a manageable size business unit or a process initially and implement KM rather than implementing across the whole organization at once

8) Be clear on knowledge that is required to be shared and that is required to be retained within the organization

9) Devise means of measuring the effectiveness of KM

Implementation of KM Processes and Practices in the Construction Industry

Egbu and Robinson (2006:36) state that there are three aspects of knowledge that need to be managed in construction context:

- 1) Products or project types
- 2) Processes
- 3) People.

They recognize technology which supports connectivity as an enabler that supports the KM processes.

Product-based factors relate to the characteristics of the services or goods to be produced, whether standardized, mature or innovative (Hansen et al., 1999 as cited in Egbu & Robibson 2006 : 36).

Egbu and Robinson (2006:36-38) further states that the construction organizations are characterized by the types of projects or the products they deliver. They state that the process-based factors relate to the technical and management systems required for the delivery of products. They further state that the people-based factors relate to skills, problem-solving abilities and the characteristics of teams.

Egbu and Robinson (2006:36-38) recognise that the 'end products' required by the clients are often different and therefore may require different technical and management processes which have implications on the processes and knowledge to be managed during design and construction . Therefore, they recognize that highly skilled individuals and competent teams are vital in the construction process. They highlight the need for problem-solving creative people with tacit knowledge for innovative projects that are often vaguely defined and complex to implement.

Al-Ghassani et al. (2006: 83-89), Egbu and Robinson (2006:39-46), Sheehan et al. (2006: 53-60), Siemieniuch

and Sinclair (2006: 65-79) and Kamara et al. (2006: 112-113), identify the KM process and practices that are in use in the construction industry as follows:

- Post project reviews
- Active involvement of top level to KM initiatives
- Availability of a Knowledge Manager, Chief Knowledge Officer or a similar position to deliver the knowledge management strategy.
- Non-traditional procurement methods
- Training and development of staff, coaching and mentoring
- Apprenticeship programmes
- Promotion of Life Long Learning
- Use of Information Technology to capture, amplify and disseminate knowledge within the organization and to 'know who knows.'
- Proper archiving practices including effective means of retrieving
- Standard construction products
- Promotion of e-business approaches
- Promotion of a culture of organizational learning and sharing and actively seeking to apply new learning
- Organisation structures promoting KM
- Team stability via use of same people working together project after project
- Research and development
- Use of partnerships, alliances, joint ventures, framework agreements
- Effective networks with the members of supply chain
- Identification of experts, empowering them and encouraging them to share
- Facilitate 'Communities of Practice' within the organization
- Motivational practices related to KM such as linking KM to appraisal system, team based rewards.
- Face to face meetings
- Brainstorming sessions
- Job rotation
- Quality circles
- Reports and project summaries
- Bulletin boards
- Best practice documents.
- Policies to retain staff to avoid knowledge drain

Egbu and Robinson (2006:43-44) state that construction industry is increasingly aware of the knowledge sharing through networks and identify knowledge sharing networks such as Construction Best Practice Programme

(CBPP), Construction Productivity Network (CPN), Movement for Innovation (M4I), Co-operative Network for Building Researchers (CNBR) as examples. They also point out the formation of a number of benchmarking clubs following Egan (1998) recommendations.

Egan (2002), the follow on report to Egan (1998) states that teams that only construct one project learn on the job at the client's expense and recommends continuous improvement of performance for the industry to become more successful. Three main drivers to secure a culture of continuous improvement are: the need for the client leadership, need for the integrated teams and the need to address people issues to secure a culture of continuous improvement (CEM, 2007:55). The client through action can create an environment conducive for KM in the project by facilitating integrated teams and addressing the people issues related to the project. The client leadership becomes more important when a client is having repeat business or a portfolio of projects.

The Movement for Innovation's Working Group (2000) attempts to find effective and practical ways for the construction industry to radically improve its performance on people issues. It states that there is a strong business case for such improvements as the firms who fail to improve their attitude and performance towards respecting people will fail to recruit and retain the best talent and business partners. It identified six action themes, namely diversity, site welfare, health, safety, lifelong learning, and off-site welfare. The working group developed a set of toolkits in the form of checklists for each of these themes and also proposed a framework of performance measures. They recommend that the implementation of proper people practices will yield benefits such as better standard of work, more cost effective projects, fewer delays and expensive mistakes, reduced staff turnover, earlier completion dates, competitive advantage and more repeat business. People are the core in KM. Proper people practices make it possible to gain total commitment from them in order to implement effective KM processes and practices that will yield these benefits.

Office of Government Commerce (2006) illustrates how best practices have been adopted in practice to achieve excellence in construction projects focusing on the approach taken toward the supply chain. The case study focuses on selecting the team, changing the culture and knowledge shared between the parties among others.

Conclusions

1) Knowledge Management (KM) in construction can improve the project delivery system.

Egan (1998) recommends that the construction industry requires substantial changes in its culture and structure in order to achieve its full potential. The recommendations include building long term relationships based on trust, sustained improvement in quality, good human relations practices and sharing learning etc.

Latham (2006) states that 'lessons learned on many construction projects are often lost at the end of a project and the parties move on to new projects.' He further states that post project reviews carried out to capture the lessons learned are usually carried out in a haphazard and untimely manner and without providing sufficient time. Therefore, Latham (2006) proposes to implement KM for improving the project delivery system.

2) There are problems associated with the implementation of KM processes and practices in the construction industry.

Carrillo et al. (2000) and Egan (1998) identified the problems associated with the implementation of KM processes and practices in the construction industry.

3) There are mechanisms / solutions to problems associated with the implementation of KM processes and practices in the construction industry.

Anumba et al. (2006: 216) identified the mechanisms that can address the problems associated with the implementation of KM process and practices in the construction industry.

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