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CURRENT STATE OF KNOWLEDGE MANAGEMENT, POTENTIAL AND TRENDS: IMPLICATIONS FOR THE CONSTRUCTION INDUSTRY

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ABSTRACT

During the past decade a paradigm shift in the domain of knowledge management (KM) has emerged out of learning occurred from unfulfilled KM initiatives. This emerging KM perspective considers it to be more of a human activity rather than a technological endeavour. The notion that knowledge can readily be captured and embedded in machines to be easily shared has lost its potency. Rather, knowledge creation and sharing is being advocated through socialisation processes like building communities of practice, either real or virtual. The esoteric, contextual and problematic nature of knowledge is becoming evident as KM research is advancing into the realms of social constructivism. These constraints in KM are being recognised, and KM strategies are being devised that consider these limitations. Issues like leadership, vision and culture have become central to the successful KM initiatives. This paper presents the changing face of KM through a literature review. It argues that KM is not just another management fad or recycled concept. Rather, various trends and potentials of KM research are identified within the context of expanding boundaries of this domain to the potential benefit of the construction industry.

Keywords: Knowledge Management, Knowledge, Innovation, and Learning

1. INTRODUCTION

Knowledge is being recognised as a vital resource and source of competitive advantage in today's dynamic and changing business environment and knowledge economy (Burton-Jones, 1999). For this reason, research in KM has gained tremendous pace since its inception in the last decade. This is evident in enormous amount of literature existing and further growing in the area of KM. A thorough review of the literature, however, reveals the transformation that KM has been through and is still undergoing. The struggle of KM researchers and advocates is evident in their fight to keep it as a separate domain, saving it from a impression of being regarded as a management fad like TQM (Total Quality Management), BPR (Business Process Re-engineering), downsizing etc or recycling of concepts like MIS (Management Information System), DSS (Decision Support System), EIS (Executive Information system) etc (Wiig, 1997; Spiegler, 2000).

This paper compliments the notion that KM is far from being a management fad (Malhotra, 2004; Kidd, 2001). It is a paradigm in its own right and occupies a separate domain of investigation, especially in the construction industry. What is required is a more comprehensive framework of theory and identification and discovery of various components of this domain. This paper discusses the current state of KM research and identifies further trends and potential in it for the benefit of the construction industry.

2. CURRENT STATE OF KM: FROM PAST TO PRESENT

The quest for obtaining knowledge and effectively utilising it is not new. This struggle is as old as the history of human thought (Spiegler, 2000). Plato, Descartes and Kant have all made attempts to define and understand the nature of knowledge and to unearth the forces underpinning various phenomena in life. The methodologies used by these philosophers in their pursuit to obtain and construct knowledge still serve today as the fundamental guidelines for basic and applied research.

The discovery, creation and construction of knowledge encapsulated in a form of various management theories in the twentieth century supported the industrial revolution, which turned later into the information revolution. In turn, this has made it possible to attain business goals in a more profound and realistic way. But it was not until mid 1980's that individuals and organisations began to appreciate the increasingly important role of knowledge in the emerging competitive environment. At this time there was the realisation that information systems and technology were continually growing, and technology was regarded as a panacea for all the complex business problems. This acted as an impetus for experts in the field of information system and technology to undertake various initiatives in the domain of artificial intelligence, and to develop different kinds of expert systems replicating the expert knowledge of human experts. The basic assumption was that knowledge could be readily obtained from an expert, easily codified and promptly put into use by others. To the researchers dismay, such initiatives did not meet with a lot of perceived success in actual practice. They met with failures and non-use primarily because of the complexity and user-non-friendliness of such technologies rendered them ineffective (O'Brien, 1997).

The technological advances in the information distributing mediums and the development of Information Communication Technologies (ICT), internet and intranet, provided IT experts with new technological tools to make it possible to capture, codify, transfer and share knowledge. Unfortunately these initiatives have also significant failed to realise expected benefits (Aouad et al., 1999; Davenport and Pursak, 2000; Fernie et al., 2002). Various causes behind the failures may include (Davenport and Pursak, 2000; Fernie et al., 2002, Walker, 2003; Liebowitz and Megbolugbe, 2003; Kamara et al., 2002; Malhotra, 2000):

- The high technological dependence of these initiatives,
- An inability to properly understand the complexity of knowledge and its esoteric nature,
- The neglect of human related factors associated with change,
- A lack of recognition of the need for appropriate leadership, vision, strategy and culture,
- Ignoring individual value systems and the notion of trust, and
- An insufficient reward system and a lack of motivation.

Storey and Barnett (2000) conducted a study of what can be learnt from the failure of KM initiatives and confirmed above mentioned factors. Egbu (2000) observes that the lesson learnt from these failures is that KM is 90% human activity and 10% technology. Similarly, Tiwana (2003) notes that KM is not about building smart intranets, digital networks, one time investment and enterprise wide 'Infobahn'.

Under this emerging paradigm of KM , the notion that knowledge can be readily made available from humans and made part of the machines is being questioned. Fernie et al. (2003) have argued against the assumption, on which orthodox KM is based; that knowledge freely exists and can be easily captured and shared through machines. They believe knowledge is a problematic esoteric concept that doesn't lend itself easily to codification. This applies especially to tacit knowledge capture that has become a contemporary theme of KM research. Tacit knowledge is highly individualistic and concomitant with various surrounding contexts within which it is shaped and enacted. For this reason KM supports and requires the building of communities of practice (Wenger, 1998) and the development of social networks through which tacit knowledge transfers and sharing may be made possible (Bresne et al., 2003; Augier and VendelØ, 1999; Swan et al., 1999; Hearn et al., 2002). These communities of practice may be real and exist in form of informal gatherings or formal conference/seminars/workshops. Alternatively, they can be virtual in the form of online forums or web-discussion boards, where experts can interchange ideas and leave their expertise and knowledge in the forum for others to utilise and share (Liebowitz and Megbolugbe, 2003).

It can be argued that the current KM research and theory has generally restricted itself to organisational knowledge contained with in the boundaries of the organisation. The emphasis is to capture, codify, transfer and share such knowledge that is embedded in the organisation's routines and processes. Knowledge resides in employees' heads in a tacit form, and KM seeks it to make it explicit through the balanced use of technology and soft human related factors like leadership, vision, strategy, reward systems and culture. This offers an efficient yet rather restricted and narrow scope of KM, and compares poorly with what KM is actually perceived to offer. There is a need to further expand its boundaries and provide benefits to organisations that meet realistic expectations.

3. DIRECTIONS IN KM RESEARCH: TRENDS AND POTENTIALS

This section outlines the various potentials and trends that form part of the current direction of undertaking KM research. The following illustrates more recent foci of KM research including revisiting the underlying concept of KM. For this reason Tiwana (2003) observes that KM is progressively developing since the 1950s. Collins (2002) who felt a sense of "Déjà vu" expressed the same sentiment while analysing knowledge work. KM may act as an umbrella term encompassing all similar concepts that are apparently having a flow of their own into one single stream. The resulting synergy would help strengthen KM concepts and would make it easy for researchers to concentrate on their research endeavours.

3.1 KM AS AN INNOVATION ENABLER

Research into the management of innovation is more than 50 years old. Organisations have always looked for improved ways of business to keep themselves highly competitive and sustainable in the market. As a result they continually create knowledge with a view to differentiate and gain advantage over their competitors. KM may well provide a means of producing advantages through innovation. Stewart (1997) explained that tacit knowledge of individuals is of immense value to the organisation as a whole, and is the 'wellspring of innovation'. The ability of KM to convert people's tacit knowledge into explicit knowledge is an essential part of innovation (Nonaka and Taguchei, 1995; von Krogh et al., 2000). A number of research initiatives are investigating the role of KM in producing and supporting innovation in the construction industry (Miozzo and Dewick, 2002; Salter and Gann, 2003; Husin and Rafi, 2003). The lessons learnt from such initiatives provide direction for future research into innovation and KM.

3.2 KM AS A LEARNING PROCESSOR

Learning is always associated with better outcomes. Having learnt lessons avoids 'reinventing the wheel' and 'making the same mistakes again'. Argyris (1978) and Senge (1990) introduced the idea of single loop learning and double loop learning, organisational learning and the learning organisation. In a project environment, and industries like the construction industry, it is highly desirable that lessons learnt are captured from one project and put into use on next 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. Maqsood et al., (2003) identify the role of KM in generating organisational learning and transforming organisation into a learning organisation. Bringing organisational learning and the learning organisation under the umbrella of KM helps various similar concepts to merge together and remove the confusions and contention influencing the research community.

3.3 KM ENCOMPASSING INNOVATION ADOPTION AND DIFFUSION ISSUES

All organisations at some point are confronted with the decision to adopt a certain innovation in a form of improved technology or process, and are faced with the challenge of how to diffuse it throughout the organisation. This is a

crucial decision as it involves significant investment and commitment on behalf of the organisation, and it may determine the success of the organisation. Researchers like Roger (1995) have discussed this issue of adoption and diffusion of innovation at great length, however the relationship with KM is an emerging theme for research. A new innovation that is adopted and diffused becomes transferred knowledge, percolating the organisation that accommodates and then manages the knowledge. This process of transfer, accommodation and management is a continuing field of research.

3.4 KM AS A KNOWLEDGE SHARING FACILITATOR IN SUPPLY CHAINS

The emerging concept of supply chains and supply chain management is revolutionising the business world. This revolution is evident in changing the unit of competition from organisation vs. organisation to chain vs. chain. At the forefront of this philosophy lie long term and strong commitment and trust among the trading partners. This sort of commitment and trust emanates from sharing the knowledge with other trading partners in the supply chain as well as joint problem solving within the concept of a 'super-team'. Conventionally information flow from one end of the supply chain to other but setting up KM elements in supply chain management, knowledge not information alone would flow from one extreme end of supply chain to other. As a result, workmanship improves, quality gets enhanced and the number of defective items reduces, producing significant amount of time and related costs savings. KM principals are for everyone in the supply chain. Only, the way through which they may want to reap benefits may vary and depend on the organisation's position in the supply chain. The type of knowledge required by organisations significantly varies depending upon its role in the supply chain. Assertions that KM is principally an issue for large organisations is misleading, all organisations regardless of their size may benefit from KM. There is a need to customize KM strategies based on the organisation's, which in turn is dependent on its position in the supply chain.

3.5 KM AS AN INTERFACE WITH ACADEMIA AND EXTERNAL INNOVATION SOURCES

Most valuable academic research with significant potential for providing benefits goes unnoticed. Similarly, other innovative organisations involved in cutting edge research find it extremely difficult to penetrate user organisations. As a result, they adopt lavish marketing strategy for their products, which often significantly raises the product price. In today's complex and highly competitive business environment, no organisation wants to give up their competitive advantage. They are often ready to adopt any sort of innovation provided they can foresee, through cost benefit analysis, benefits arising out of it. Construction organisations, especially, are so busy coping with the swift pace of construction that hardly any time is left for them to look for the ways to improve their work practices. Their main objective is always to get the work done as soon as possible and save themselves from the sword of liquidated damages that always looms over their heads. A strong need is felt by construction organisations, therefore, for having an interface with the external world and to be able to browse through available innovations and cutting edge research, choose and sample those based on the needs of the organisation and

disseminate them to concerned personnel and departments. KM can well take up this role (Maqsood, et al., 2003).

3.6 KM AS AN R&D FACILITATOR AND INNOVATION DIFFUSER

Business organisations in various sectors operate their own R&D departments fairly well but construction organisations find it very hard to justify investment in R&D. As described earlier, most of the time, they are happy with the tools and techniques they already have and consider those enough to finish the on-going project. Settling R&D under the theme of KM would give a new vigour and vitality to the concept of R&D, where the objective would not only be the creation of knowledge but also codify and disseminate it in timely fashion through sharing and socializing.

Recent research results on ICT diffusion and its link with KM has reinforced KM's role (Peansupap et al 2003). Further acknowledgment of the 'stickiness' of knowledge, its difficulty in being effective transferred (Szulanski 2003) together with improved understanding of how innovation and knowledge is transferred (Dixon 2000), has led to a greater appreciation of the role of KM as a diffusion mechanism of bringing R&D and innovation together as joint mechanisms in building competitive advantage. Further, the link between R&D and building what Cohen and Levinthal (1990) describe as absorptive capacity, the ability to build learning through experience of experimentation and reflection, is being more widely appreciated now that wider principles of KM are linked to the R&D process.

3.7 KM COMPLIMENTING THE HUMAN RESOURCE FUNCTION

As we learn, under the new and emerging paradigm, its people not machines that matters most to the organisation. Human resource management (HRM) for a long time is associated with handling of people's intelligence. Here lies a great opportunity for KM to assist and compliment existing human resource management practices and provide with some framework where it may be possible to quantify people's intellect so their knowledge is best exploited to the benefit of the organisation. Potential research in this realm also includes the re-evaluation of HRM as a more active and strategic enabler of building organisational competencies, of developing reward systems to more effectively facilitate knowledge exchange and embedding knowledge and competence within organisations provides fertile ground for KM research.

4.0 CONCLUSIONS AND FURTHER WORK

The paper has discussed the current state of KM research and has identified various research directions that may be possible under the theme of KM. The list of initiatives examined is not exhaustive and may enlarge as the research area progresses.

KM research has seen a paradigm shift in focus from more technology dependent to less technology dependent and is being considered more human oriented activity. This has made often ignored issues like leadership, vision, culture, motivations and rewards even more crucial to the success of KM initiatives. KM is emerging as a business philosophy promising enhanced benefits to the organisations. Some may argue that KM is not new *per se* or a recycled concept. However, this is not true, KM is a paradigm in its own right and occupies its own intellectual domain. At present researchers are focussing

their effort on a very restricted view of KM. KM is actually associated with the handling of any type of knowledge which makes it possible to merge various streams of research (knowledge) with KM. Research in innovation, organisational learning and learning organisations, adoption of innovation and its diffusion can suitably be merged with KM theory. This would simplify the research process and would reduce complexities and confusion in a research process. At the same time it would make easy for practitioners to understand it and hence employ it.

The identification of various potential and trend makes ground fertile for our future work, where we are researching to show the legitimate existence of KM function or department in a certain organisation and roles and responsibilities that can specifically be undertaken by it.

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