KNOWLEDGE MANAGEMENT AND INTELLECTUAL CAPITAL: BENEFITS FOR PROJECT BASED INDUSTRIES

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Abstract

National and international governments, practitioners and academics have identified the area of knowledge management (KM) as critical for organisational and national competitiveness. Similarly, intellectual capital (IC) in the form of human capital is also seen as vital for project and organisational effectiveness. Managing knowledge and human capital is particularly relevant to the construction industry which is characterised by projects that are prototypical in nature, has temporary multi-disciplinary teams and structures and relies heavily on experiences as a basis for planning, decision making and the forming of project and organisational networks. This paper is based on an on-going postgraduate research study, which is aimed at investigating the role of knowledge management and intellectual capital assets on organisational innovations in project based industries. The study employs a combination of research approaches, including ethnographic interviews, postal questionnaires and the analysis of archive documentation. Through a thorough review of the relevant literature and interviews with personnel from different organisations and project environments, the paper explores the challenges associated with understanding and applying KM and IC, together with the practical benefits that could ensue from their effective management. Lessons for the construction industry and for surveying practices in particular are also highlighted. The paper concludes that the effective management of KM and IC has the potential to contribute to time saving, cost reduction, improved supply chain management, respect for people, trust building and improved process and product innovations. It is suggested that there is ample scope for empirical investigations in the areas of KM and IC, especially from a human resource management perspective. There is also a need for improved awareness of these important areas in construction and the quantitative and qualitative measurements of the contribution of KM and IC to projects and to organisational strategy.

Keyword: Intellectual capital, Innovation, Knowledge management, Projects

INTRODUCTION

In the last 20 years, ‘knowledge’ has been celebrated as a resource that is as important for organisations to understand and manage as labour and capital was in the ‘old economy’. The meteoric ascendancy of knowledge management is emblematic of the increasing attention paid by organisations to their internal capabilities.

The last decade has also seen a shift in management focus from traditional accountancy practices where financial capital is paramount, to growing realisation that intangible assets are of greater significance in our knowledge based economy. It is estimated that more than 10 per cent of GDP in OECD countries go into intangibles of intellectual capital (IC) (Edvinson, 2000).

The Gottlieb Duttweiler Foundation found that only 20% of knowledge available to an organisation, is actually used (Brooking, 1996). Knowledge can be a valuable resource for competitive advantage and harnessing its value is likely to be one of the pre-eminent challenges of management in the first decade of the 21st century.

Stewart (1994) argues that an organisation’s capacity to innovate depends considerably on the knowledge and expertise possessed by its staff, assets ‘that can vanish overnight’. Therefore, managing that knowledge is an essential requirement for innovative organisations. Knowledge management (KM) is about harnessing the different types of knowledge or intellectual capital (IC) in an organisation so that they can be commercially exploited, leading to competitive advantage.
AIMS AND OBJECTIVES OF THE PAPER

The research study on which this paper is based is primarily aimed at investigating the role of knowledge management and intellectual capital assets on organisational innovations in project based industries.

However, in this paper, the focus is on exploring the challenges associated with understanding and applying KM and IC, together with the practical benefits that could ensue from their effective management. Lessons for the construction industry and for surveying practices in particular are highlighted.

METHODOLOGY

The on-going postgraduate research study employs a combination of research methodologies including ethnographic interviewing, discussions with researchers in the area of KM and IC, postal questionnaires and the analysis of archive documents. Finally, a thorough review of the relevant literature on creativity, innovation, knowledge management, intellectual capital and organisational learning has also informed this paper. So far, 20 ethnographic interviews have been conducted in six diverse project-based organisations, from construction, manufacturing and local authorities.

In this paper, a review of KM and IC will be conducted. Attention will also be levelled at the challenges associated with managing KM and IC as well as the potential benefits that could accrue from their effective management. Some tentative findings from the ethnographic interviews conducted to date will be discussed throughout the paper as and when appropriate.

REVIEW OF LITERATURE ON KNOWLEDGE MANAGEMENT (KM) AND INTELLECTUAL CAPITAL (IC)

The literature on KM is vast and ranges across disciplines. Much of it focuses on the role of IT and information systems (IS) in KM and the tools that aid knowledge transfer and storage (Egbu, 2000, 1999). Although IT and IS are essential requirements in ‘enabling’ KM, the true asset of an organisation is it’s brainpower (Edvinsson, 2000). People are the principal motors of change in the business environment and it is therefore, essential to study the dimensions of social interaction and networking within and across organisations.

Davenport (1995) asserts that "the most dramatic improvements in KM capability in the next ten years will be human and managerial" (as cited in Scarborough et al., 1999, p.23). People create, generate and share knowledge. KM is, therefore, about people and the social networks created in an organisation. The management of knowledge is intrinsically linked to the management of people and the processes that facilitate knowledge generation (Egbu et al, 2001).

Identifying and exploiting knowledge assets, or intellectual capital (IC), has been vastly documented. There are different types of knowledge in an organisation from the tacit knowledge of individuals, which is unarticulated and intuitive, to explicit knowledge that is codified and easily transmitted (Nonaka and Takeuchi, 1995). Further distinctions have been made by academics and practitioners involved in the IC debate. Three components of IC have been identified comprising of human, structural and customer capital (Edvinsson, 2000; Bontis, 1998; Bontis et al., 2000). Clearly, structural capital describes the internal structure of an organisation, such as its strategies, core competencies and culture, which is always context specific. Customer capital encompasses the external intangible assets of an organisation. External forces play a part in determining the market position and strength of an organisation. Customers are the principal determinants of this position (Smith and Saint-Onge, 1996). However, it is asserted that the human capital in an organisation is the most important intangible asset, especially in terms of innovation (Edvinsson, 2000; Stewart, 1997; Roos et al., 1997; Brooking, 1996). The unique tacit knowledge of individuals is of immense value to the organisation as a whole, and is the “wellspring of innovation” (Stewart, 1997).

Identifying the different types of knowledge available to an organisation is the first step to understanding how to manage them. Therefore, KM is inexorably linked to IC. Brooking (1997) suggests that KM is concerned with the strategy and tactics to manage IC. In this respect knowledge is seen as a resource to be capitalised, a perspective that has been criticised for its mechanistic reductionism. An alternative perspective understands knowledge as socially constructed. This perspective offers a more complex view of organisations, as social episodes that rely heavily on creative individuals to drive them (Davenport and
Prusak, 1998; Scarborough et al., 1999). An open and flexible organisation is advocated where the learning process is actively encouraged.

There are many definitions of KM, however, an operational definition has been developed for the purposes of this research. KM is about the processes by which knowledge is created, stored, captured, shared, transferred, implemented, exploited and measured to meet the needs of an organisation.

**KNOWLEDGE MANAGEMENT AND INTELECTUAL CAPITAL IN SURVEYING PRACTICES - SOME CHALLENGES**

From a construction industry perspective, effective knowledge management should be seen to involve the creation, capturing, sharing, implementing and exploitation of knowledge. In this context too, individual knowledge would have to be transferred to a project and/or an organisational knowledge base to improve project and organisational goals. Surveying practices in the United Kingdom are undergoing real and rapid change, mainly due to market forces. Against a background of rapid change in their environment, surveying practices are being urged to anchor their strategy so that it focuses not on organisational routines but on dynamic capabilities.

It is perceived that strategic planning and the need for growth require organisations to develop firm-specific patterns of behaviour, i.e. difficult to imitate combinations of organisational, functional and technological skills (Teece et al., 1997). These unique combinations create competencies and capabilities and take place as the organisation’s intangible knowledge is being applied in its business behaviour, especially in its value-adding business process. Competitive advantage stems from the firm specific configuration of its intangible knowledge.

The association of knowledge with the process of new capability development has been highlighted in the work of Leonard Barton (1995). According to Leonard-Barton, the capabilities building process is sustained and nurtured by four groups of organisational activities that are instrumental in the creation and diffusion of knowledge. These are: (1) shared creative problem-solving to produce current products (service) (2) implementing and integrating new methodologies and tools, to enhance internal operations (3) formal and informal experimentation, to build capabilities for the future and (4) learning from outside the organisation. The weakness of Barton’s approach lies in the fact that it does not provide detailed insights into what takes place as work practice knowledge is transformed into capabilities. This perceived drawback seems to be accommodated in the ‘Learning Ladder’ of Andreau and Ciborra (1996). Their three learning loops explain how work practices are involved in the transformation of organisational resources to capabilities and then to core capabilities.

Preliminary interviews from our study to date would suggest that the development of successful knowledge management programmes involve due cognisance of many factors. They involve ‘hard’ (e.g. technology and knowledge content) and ‘soft’ (e.g. culture, people, leadership, motivation) issues.

Organisational culture is of great significance to KM. In order to establish a knowledge-based organisation their needs to be a supportive organisational culture. It has been argued that the cultivation of a ‘learning organisation’ is an essential requirement for knowledge managers (Senge, 1990). Further theories about organisational culture favour the evolution of a ‘community of practice’ where social interaction of employees cultivates a knowledge sharing culture based on shared interests, thus encouraging continuous knowledge generation (Adams and Freeman, 2000). Information technology can impact upon organisational culture. Cohen (1998) argues that although IT may enhance a knowledge sharing culture, it may also restrict it by reinforcing boundaries between and within departments/social groups. Therefore, effective KM must encourage the right kind of organisational culture.

In all organisations, the politics of knowledge sharing is an issue. Employees and employers from diverse backgrounds often come into conflict over important decisions. It could be argued that manipulating these tensions to achieve ‘creative abrasion’ could be a strategy to maximise innovation. However, it is a challenging task that involves disciplined management. Leadership is an inherent part of organisational culture, but also extends into areas of strategy and structure. Sullivan (1999) argues the need for a managerial commitment to the long-term strategic vision of an organisation and the motivation to achieve
the goals set out. Moreover, empowering employees to generate and share knowledge is the task of management. For example, implementation of rewards and punishment schemes are stimulus for successful KM (Scarborough et al., 1999). Motivating employees to share the knowledge they have involves good people management, where trust is itself an incentive. The establishment of a psychological contract between employer and employee, for example, is a constructive approach to developing a knowledge-sharing culture (Scarborough et al., 1999).

The external business environment is an essential dimension in this discussion. While not everyone would honour the social constructionist view that the principal determinants of individual and organisational knowledge are social structures, few could deny the influence of external forces on organisational effectiveness. Achieving competitive advantage requires focused attention on consumer trends and the market. This has become increasingly complex since the globalisation of business environments, which has compelled organisations to compete and co-operate internationally. In the construction industry the advent of partnering, alliances, joint venturing, PFI projects and prime contracting has necessitated even further collaboration and knowledge sharing.

In our study, we noted that organisations are at different stages on the KM trajectory. Their KM practices also differ. Most of the organisations we interviewed maintained that informal KM practices existed in the form of verbal communication and social interaction. However, all organisations backed this up with more formal procedures to encourage knowledge sharing, such as regular meetings and an Intranet. The largest organisation had implemented formal programmes, such as Investors in People (IIP) and the Business Excellence Model (BEM) to assist in the formal development of KM practices. In contrast, the smallest organisation, with approximately 25 employees, opted out of IIP because of its rigid regulations for employee assessment, preferring a more flexible approach to monitoring and evaluating employee performance. From the last point, it could be argued that the size of an organisation may influence the level of formality involved in KM practices.

Projects are by definition temporary endeavours with a start and a finish dates. They are coalitions of individuals and teams who come together for the duration of the project and then disband after the end of the project. This latter characteristic of a project poses some challenges for project-based organisations in terms of knowledge management. These include the difficulty of building trust among project team members, motivating project staff and operatives during the project period.

Information gleaned from the ethnographic interviews in the on-going study reveals that tacit knowledge is difficult to articulate and transfer. Its transfer demands that the parties involved in the transfer share cognitive frames and hold common heuristics. The receiver of tacit knowledge should hold the absorptive capacity needed to use and benefit from the knowledge transferred. The lack of absorptive capacity of the receiver is a potential obstacle to tacit knowledge transfer.

Knowledge is ‘power’. It is therefore not surprising if individuals in organisations are reluctant to relinquishing power. This is a challenge for all organisations. Organisation should endeavour to espouse ‘the law of increasing returns’ to knowledge as a positive way of encouraging knowledge sharing. Shared knowledge stays with the giver while enriching the receiver. The issues of trust, respect and reciprocity are vital elements of a conducive environment for managing tacit knowledge. It is through these that individual members of project-based organisations can be motivated to share their experiences and exploit their creativity.

If leaders of surveying practices and other project-based organisations are interested in knowledge capture, sharing and exploitation, then it is necessary to consider that their workers should be included in a dynamic process. This process is one that demands the support of motivation, creativity and the ability to improve an intellectual and comprehensive vision of the relationship between organisations and the workforce. Simply put, individual knowledge should be seen as an organisational intellectual capital, and an important factor in project and organisational success.
Once an organisation comes to the understanding that it has intellectual capital, how it converts it to something of value will depend, at least in part, on the kind of value it wishes to extract from its IC. For example, the kind of value a surveying practice might obtain from its IC is diverse and could include: profit generation, strategic positioning, acquiring the innovations of others, customer loyalty, cost reductions, improved productivity, respect for people, trust building. The following list some potential benefits of KM and IC to a medium-sized surveying practice.

**Strategic Benefits**

An enterprise will build an increasing competence to provide improved products and services with ‘higher knowledge content’ through:

- Having knowledge workers who possess and have access to better applicable knowledge
- Organising work to facilitate application of best practice

**Tactical Benefits**

- More effective knowledge transfer methods between knowledge workers
- More effective discovery of knowledge through systematic methods
- Easier access to intellectual capital assets
- Effective capture of routines and operational knowledge from departing personnel
- Employees will obtain greater understanding of how their personal goals coincide with the enterprise’s goals

**Operational Benefits**

- Educating employees in the principles of their work (scripts, schemata, and abstract mental modes)
- Providing knowledge workers with aids to complement their own knowledge
- Training knowledge workers to operationalise abstract knowledge to match requirements of practical situations.
- Operational areas will experience less rework and fewer operational errors.
- The enterprise will achieve greater use of knowledge

The above should impact upon the bottom line through their effect on reducing operating costs, being more responsive to the needs of clients and the markets, and through improving an organisation’s marketing image.

**CONCLUSIONS AND RECOMMENDATIONS**

The paper has considered the importance of knowledge management in project-based organisations. It has also explored some of the challenges associated with the management of knowledge and intellectual capital. These include ‘hard’ (e.g. technology and knowledge content) and ‘soft’ (e.g. culture, people, leadership, motivation, trust) issues. Other challenges are ‘organisational politics’ and external market forces.
It has also been argued that an understanding and implementation of effective knowledge management principles could lead to strategic, tactical and operational benefits. It has the potential to contribute to cost reduction, improved supply chain management, time saving, respect for people and improved process and product innovations.

Organisations are at different ‘stages of maturity’ in the management of knowledge and intellectual capital. Managing tacit knowledge is difficult. Organisations employ different techniques (formal and informal) in their attempt to manage tacit knowledge.

There is scope for improved awareness of the contribution of KM and IC in construction organisations. Similarly, with few formal approaches for measuring the benefits associated with the management of knowledge and intellectual capital in construction organisations, there is a need for more empirical research in this very important area.

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