

The Impact of Technological Frames on Knowledge Management Procedures

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INTRODUCTION

This article intended to explore technological frames held by organisational group members that implicitly served to shape their interpretations of events to give meaning and deliver actions in knowledge management procedures. The research used the existing technological frame (Orlikowski & Gash, 1994) concept to interpret the social aspect of the problems associated with the introduction and utilisation of information technology in conducting knowledge management systems. This research was carried out in the context of four different industries in Taiwan and four cases based on each industry were chosen.

BACKGROUND

During the previous two decades, information systems and information technology have become the key factors of organisational development (Brancheau & Wetherbe, 1990). This trend has been demonstrated by a significant number of successful and unsuccessful cases (Ginzberg, 1981) of several different organisations around the world which are using information technology. All of these cases support the belief that organisations outperforming competitors in the business world are those using state-of-art technologies efficiently (Brancheau & Wetherbe, 1990). This research identified the elements of diagnosis and presented recommendations to incorporate information technology into organisations and successfully developed competitiveness and productivity elements in the business functions context.

With the advent of the age of knowledge economics, organisations utilise information technology in order to survive in a dynamic challenging environment. While adopting knowledge management systems within firms has become the trend in Taiwan, education of employees to be familiar with modern technology remains important.

Individual vision on technological phenomena provides strategies devised by organisational top management with meaning. Each individual establishes some strategies to observe, understand, and use technology. These strategies have been re-created in literature as a 'technological frame.' This term comes from a revision of technological phenomena in the social scope, in which the common perspective and technology social construction are analysed. Technological frame means an individual's interpretation of technology and how they shape their behaviour toward it. This term originally comes from Orlikowski and Gash (1994) who set the groundwork for a sociocognitive approach toward information technology. The main point is that an understanding of an individual's interpretations of a technology is important in order to understand their interaction with technology. Therefore, in knowledge management procedures, individuals need to understand technologies before interacting with them, and during the sense-making processes, they develop particular assumptions, expectations, and knowledge of the technology, which then serves to shape subsequent actions toward technology (Orlikowski & Gash, 1994).

In most organisations, it is assumed only technologists can handle technologies effectively; other personnel such as high-middle level managers and other staff generally do not deal with it as effectively as technologists. This is because different group members within organisations have difficulties and conflicts around the development, use, and changes associated with technology (Orlikowski & Gash, 1994). As a result, research on technological frames among different group members in firms is necessary and valuable because research outcomes are useful and helpful when firms implement the knowledge management systems. This article focuses on exploring the impact of technological frames among different stakeholders linked to knowledge management procedures. By covering all potential group members of a knowledge management system, this research gained a better understanding of each individual's perceptions and expectations toward information technology and knowledge management.

TECHNOLOGICAL FRAMES

Researchers have examined a number of social, cognitive, and political processes in technological frames that influences knowledge management activities and outcomes. A theoretical approach that focuses on sense-making processes is helpful for investigating why participants in such activities understand requirements as they do (Davidson, 2002; Dougherty, 1992) and why their understanding of requirements may change and shift (El Sawy & Pauchant, 1988). Orlikowski and Gash (1994) develop the concept of technological frames of references as an analytic lens for examining how stakeholders' sociocognitive interpretations influence their action related to IT development and use in organisations.

Technological frames have powerful effects in that people's assumptions, expectations, and knowledge about the purpose, context, importance, and role of technology will strongly influence the choices made regarding the design and use of those technologies (Noble, 1986; Orlikowski, 1992; Pinch & Bijker, 1987). Because technologies are social artefacts, their material form and function will embody their sponsors' and developers' objectives, values, interests, and knowledge of that technology (Davidson, 2002; Orlikowski & Gash, 1994). For instance, views of how work should be done, what the division of labour should be, how much autonomy employees should have, and how integrated or separated production units should be, are all assumptions that are consciously or implicitly built into information technology by systems planners and designers (Boland, 1979; Hirschheim & Klein, 1989; Orlikowski, 1992).

VARIOUS KNOWLEDGE MANAGEMENT PERSPECTIVES

During the 1990s, knowledge has been viewed as a primary asset and knowledge management as a key differentiator between competing organisations (Drucker, 1995). As with the concept of knowledge, there has been a proliferation of attempts to define knowledge management in the literature and the choice of the best definition is a subjective judgment for each reader and author. Common in the literature are the constructs that define knowledge management as a process. In terms of organisational knowledge, these constructs can

be summarised as creation, capture, storage, access, and transfer. Other common descriptors assigned to knowledge management are usage, recording, sharing, generation, and accumulation, or as been defined as procedure or activities.

Knowledge has limited value if it is not shared. The ability to integrate and apply specialised knowledge by organisation members is fundamental to a firm in creating and sustaining a competitive advantage (Grant, 1996). Knowledge management is managing the corporation's knowledge through a systemic and organisational specified process for acquiring, organising, sustaining, applying, sharing, and renewing both tacit and explicit knowledge by employees to enhance the organisational performance and create value (Alavi & Leidner, 1999; Allee, 1977; Davenport, De Long, & Beers, 1998; Lai & Chu, 2002). It is quite often that companies, particularly those that compete on the basis of services and expertise, facilitate the codification, collection, integration, and dissemination of organisational knowledge using computer systems because they can facilitate communication and information sharing (Alavi & Leidner, 1999; Lai & Chu, 2002).

Davenport et al. (1998) stated there were four kinds of knowledge management: (1) creating knowledge repositories in which knowledge can be retrieved easily; (2) improving knowledge access to facilitate its transfer between individuals; (3) enhancing a knowledge environment to conduct more effective knowledge creation, transfer, and use; and (4) managing knowledge as an asset and concern about how to increase the effective use of knowledge assets over time. According to Malhotra (1998, p. 59), "knowledge management caters to the critical issues of organisation adaptation, survival and competence in the face of increasingly discontinuous environmental change" and adding that managing knowledge embodies processes that seek to combine the "data and information processing capacity of information technologies" with "the creative and innovative capacity of human beings."

Nonaka (1991) highlighted the importance of knowledge management in today's globally competitive market place when he stated successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation, and quickly embody it in new technologies and products. The area of knowledge management is an overarching strategy designed to leverage an organisation's capacity for creating and communicating knowledge as a resource

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