

## Chapter 2.13

# A Conceptual Framework for Effective Knowledge Management Using Information and Communication Technologies

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### **ABSTRACT**

This paper investigates the role of information and communication technologies in enabling and facilitating the conversion of knowledge objects in knowledge management and explores how these roles might be affected in an organization. Such an investigation is based on a critical analysis of the relationships between data, information and knowledge, leading to the development of a transformation model between data, information and knowledge. Using a multi-method approach, in this paper, the author presents a conceptual

framework for effective knowledge management in an organization. The author discusses the implications of the proposed framework for designing and developing knowledge management systems in an organization.

### **INTRODUCTION**

Knowledge management is a systematic process of managing knowledge assets, processes, and organizational environments to facilitate the creation, organization, sharing, and utilization of knowledge for achieving the strategic aim of an organization (Wij, 1997; Alavi & Leidner,

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2001; Kakabadse et al., 2003; Song et al., 2005). In today's dynamic environment, effectively managing organizational knowledge is of tremendous importance for an organization to gain and sustain its competitive advantage due to the advent of the knowledge economy, increased globalization, the rapid advance of technology, the changing demand of increasingly sophisticated customers, and the turbulent competition in the market (Liao, 2003; Beccerra-Fernandez & Sabherwal, 2006).

The importance of effective knowledge management in an organization has been increasingly being recognized both in business (Foy, 1999; Teleos, 2004, 2006) as well as in academy (Nonaka et al., 1995; Drucker, 1997; Davenport & Prusak, 2000; Prusak, 2006). This leads to the development of numerous knowledge management theories and practices (Martensson, 2000; Chauvel & Desprs, 2002; Desouza, 2003; Babcock, 2004) due to the tremendous benefits that effective knowledge management brings to an organization including (a) responding to customers quickly, (b) developing new products and services rapidly, (c) shortening the response time for client engagements, (d) improving project management practices, (e) increasing staff participation, (f) enhancing communication, (g) reducing problem-solving time, (h) better client services, and (i) better performance measurement (Alavi & Leidner, 2001; Chauvel & Desprs, 2002; Lehane et al., 2004). As a result, much attention have been paid to design and develop strategies, policies, and technical tools for effective organizational knowledge management through making the full use of the available information and communication technologies (Spiegler, 2003; Tsui, 2003).

Knowledge, however, is an elusive concept (Blacker, 1995; Tuomi, 2000; Deng & martin, 2003; Song et al., 2005). The complex nature of knowledge offers many challenges, resulting in different approaches being developed (Nonaka et al., 1995; Davenport & Prusak, 2000; Alavi & Leidner, 2001; Bhatt, 2001). Among these, the technological approach to organizational

knowledge management is one that is commonly adopted (Deng & Martin, 2003; Martin & Deng, 2003). This approach focuses on the application of information and communication technologies (ICT) for managing knowledge in an organization (Ruggles, 1998; Spiegler, 2003; Song et al., 2005).

The rapid advance of ICT offers unprecedented capacities and potentials for effective knowledge management (O'Leary, 1998; Beccerra-Fernandez & Sabherwal, 2006; Hasan & Crawford, 2003; Tsui, 2003). There are, however, still concerns about the role of ICT in organizational knowledge management. This is owing to the failure of numerous knowledge management initiatives using ICT in knowledge management (Desouza, 2003; Tsui, 2003; Song et al., 2005). This shows that it is desirable and necessary to further explore the role of ICT in organizational knowledge management in order to help organizations make use of the full potential of organizational knowledge management through the adoption of modern technologies.

This paper investigates the role that ICT plays in enabling and facilitating the conversion processes of knowledge objects in organizational knowledge management and explores how these roles might be affected in an organization. It critically analyzes the relationships between data, information and knowledge, resulting in the development of a novel transformation model between data, information and knowledge. Using a multi-method approach, the paper presents a conceptual framework for effective knowledge management in organizations. The implications of this new framework for designing and developing knowledge management systems are also discussed.

In what follows, we first discuss the knowledge transformation process through a comprehensive analysis on the relationship between data, information and knowledge. We then define the research questions for this study, followed by the discussion on the design and implementation of the research. The role of ICT in facilitating the conversion processes of knowledge objects in

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