A Framework for Understanding the Complementary Roles of Information Systems and Knowledge Management Systems

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ABSTRACT

Knowledge is nowadays an essential resource for modern organizations to support sustainable competitive advantage. Many authors point out that as knowledge is created, disseminated, and applied, it contributes to value creation within organizations by enhancing their capabilities to respond to pressures from the external environment. To acknowledge the critical role of knowledge in modern organizations, knowledge management has emerged as a scientific discipline. However, the dominant view of knowledge management is technology-oriented and considers this activity primarily as an integrated approach to identifying, retrieving, capturing, storing and sharing organization’s information assets. This mechanistic and technology-oriented view of knowledge management is the main cause of the failure of many knowledge management systems built within modern organizations. It is thought that the well-established technology-oriented knowledge management approach has to be improved in order to facilitate building effective knowledge management systems which help modern organizations in their search of continuous and sustainable competitive advantage. This paper proposes a framework - based on the Popper’s three worlds theory - which helps understand the complementary roles of information systems and knowledge management systems.

Keywords: Information System, Knowledge, Knowledge Management, Knowledge Management System

1. INTRODUCTION

Many authors point out that knowledge is nowadays an essential resource for modern organizations to support sustainable competitive advantage. For example, Choi, Poon, and Davis (2006) highlight that as knowledge is created, disseminated, and applied, it contributes to value creation within organizations by enhancing their capabilities to respond to pressures from the

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external environment. Nonaka, Toyama, and Konno (2000) confirm this analysis by noting that the purpose of an organization is to continuously create knowledge which is necessary for its growth and survival (Carneiro, 2000; Nonaka, Toyama, & Nagata, 2000). That knowledge is today the most vital resource of modern organizations is due to the shift from traditional economic systems based on physical labor to economic systems which rely on knowledge work. Such a transition has been facilitated by the increasing mechanization and automation as well as by information technology which enables organizations to process and make use of ever more information in ever decreasing time cycles. The contribution of knowledge to organizations’ performance is highlighted by the resource-based view and the knowledge-based view of the firm. On the one hand, the resource-based view models an organization as a collection of tangible and intangible resources which form inputs for organization’s production processes (Penrose, 1959; Barney, 1991; Collis & Montgomery, 1995). On the other hand, the knowledge-based view is a new stream of the resource-based view which considers organizations both as knowledge creating entities and repositories of knowledge (Conner, 1991; Nonaka & Takeuchi, 1995; Kogut & Zander, 1992; Grant, 1996; Kogut, 2000). According to the knowledge-based view, knowledge is the central and main strategic resource of organizations. This theory suggests that knowledge form the basis for differential organization performance since it transforms individual and social skills and know-how into economically valuable products and services. Grant (1996) argues that the role of organizational actors consists in creating knowledge while the role of organizations is in the integration of individuals’ knowledge, and the application of existing knowledge to produce goods and services.

To acknowledge the critical role of knowledge in modern organizations, knowledge management has emerged as a scientific discipline (Becerra-Fernandez, Gonzalez, & Saberhwal, 2004). Nevertheless, the dominant view of knowledge management is technology-oriented and mechanistic. It sees knowledge management primarily as an integrated approach to identifying, retrieving, capturing, storing and sharing organization’s information assets. This view of knowledge management is the main cause of the failure of many knowledge management systems built within modern organizations. On the one hand, this view omits many relevant issues which include notably the social nature of knowledge, and the role of information technology in knowledge sharing. Besides, it does not suggest how to take into account specific contexts and associated emotions that characterize tacit knowledge (Nonaka & Takeuchi, 1995). On the other hand, this view results in confusion between information systems and knowledge management systems. We think that the well-known technology-oriented and mechanistic knowledge management approach has to be improved in order to facilitate building effective knowledge management systems which help modern organizations in their search of continuous and sustainable competitive advantage. Improvements require firstly, the identification of the differences between information systems and knowledge management systems and secondly, the description of their roles within modern organizations. In this paper, we propose a framework - based on the Popper’s three worlds theory - which explains the complementary roles of information systems and knowledge management systems. Our paper is organized as follows. After a short introduction which describes the context and the research problem, we define in section 2 the data, information, and knowledge concepts and explain why they are different. In section 3, we propose a literature review of the main academic contributions related to the knowledge management area. In section 4, we present the Popper’s three worlds theory which constitutes the theoretical foundation of our framework. Section 5 presents the proposed framework and describes its impacts on either knowledge management, or information systems management and governance. In section 6, we use the proposed framework to identify the main component of knowledge management
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