

# **Empirical Investigation of Critical Success factor and knowledge management structure for successful implementation of knowledge management system – a case study in Process industry**

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## **Abstract**

This paper discuss about the critical success factors involved in implementing a knowledge management system (KMS), in order to enhance a firm's competitiveness. Based on case study and a literature review, this study outlines the factors necessary for effective implementation of a KMS. This paper also proposes and evaluates a novel management structure that encourages knowledge sharing across an organization.

## **1. Introduction**

With the rapid and constant changes taking place in information technology and the Internet, traditional business models must continue to meet the changing business environment in order to survive. Only firms participating in the creation and utilization of knowledge can hope to enjoy the rewards of business reform in today's knowledge-based economy. Thus, the issues surrounding knowledge management have attracted more and more concern from both industry and academia. Due to the technological features of the profession, the processing industry has a close relationship with the adoption, creation and warehousing of knowledge, research and marketing being one of its core competencies. Effective knowledge management can help the processing industry to accumulate core knowledge, build corporate intelligence and gain a competitive edge.

## 2. Literature Review

### 2.1 Definition of knowledge management

Knowledge is not easily measured or audited, so organizations must manage knowledge effectively in order to take full advantage of the skills and experience inherent in their systems and structures as well as the tacit knowledge belonging to the employees of the firm. Prior studies defining knowledge management are shown in Table 1. Knowledge management is a managerial activity which develops, transfers, transmits, stores and applies knowledge, as well as providing the members of the organization with real information to react and make the right decisions, in order to attain the organization's goals".

**Table 1. Definition of knowledge management**

Author	Definition of knowledge management
Ouintas et al. (1997)	KM is to discover, develop, utilize, deliver, and absorb knowledge inside and outside the organization through an appropriate management process to meet current and future needs

Allee (1997) Davenport (1998) Alavi and Leidner (2001)	KM is managing the corporation's knowledge through a systematically and organizationally specified process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge of employees to enhance organizational performance and create value
Gupta et al. (2000)	KM is a process that helps organizations find, select, organize, disseminate, and transfer important information and expertise necessary for activities
Bhatt (2001)	KM is a process of knowledge creation, validation, presentation, distribution and application
Holm (2001)	KM is getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information
Horwitch and Armacost (2002)	KM is the creation, extraction, transformation and storage of the correct knowledge and information in order to design better policy, modify action and deliver results

## 2. 2 Critical Success Factors

This paper has incorporated ten dimensions of critical factors affecting the KMS implementation from Knowledge management system literature review; these ten dimensions are shown in Table 2. The critical factors affecting the adoption of a KMS in the processing industry were summarized after a critical review with consideration given to implementation costs.

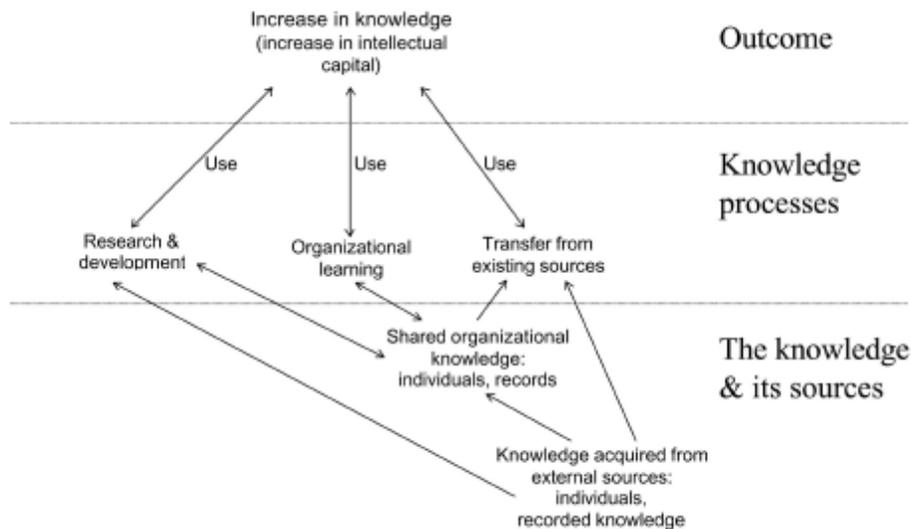
**Table 2: Critical Success factors**

<b>Dimensions of critical factors</b>	<b>Related research studies</b>
A trusting and open organizational	Davenport et al. (1998), Buckman (1999),

culture	Greco (1999), Ryan and Prybutok (2001), Wild et al. (2002), Moffett et al. (2003)
Senior management leadership and commitment	Davenport et al. (1998), Van Buren (1998), Greco (1999), Dess and Pickens (2000), Ryan and Prybutok (2001), Moffett et al. (2003)
Employee involvement	O'Brien and Crause (1995), McCune (1999), Wilson and Asay (1999), Ryan and Prybutok (2001), Moffett et al. (2003)
Employee training	Greengard (1998), Cohen and Backer (1999), Moffett et al. (2003)
Trustworthy teamwork	Geraint (1998), Greengard (1998), Ryan and Prybutok (2001), Moffett et al. (2003)
Employee empowerment	Ward (1997), Martinez (1998), Ulrich (1998), Duval (1999), Verespej (1999), Moffett et al. (2003)
Information systems infrastructure	King (1996), Davenport et al. (1998), Greco (1999), Bourdreau and Couillard (1999), Savary (1999), Ryan and Prybutok (2001), Lee and Hong (2002), Paiva et al. (2002), Wang (2002), Moffett et al. (2003)
Performance measurement	Martinez (1998), Bassi and Ven Buren (1999), Pearson (1999), Barsky (2000) Moffett et al. (2003)
Benchmarking	Davis (1996), Drew (1997), Day and Wendler (1998), O'Dell and Grayson (1998) Moffett et al. (2003)
Knowledge structure	Davenport and Klahr (1998), Buckman (1999), Greco (1999), Hickins (1999), Tynan (1999), Hsieh et al. (2002), Moffett et al. (2003)

### 3. Source of Knowledge Management System

KM practitioners assume that knowledge is a modern organization's most important resource, the only resource not readily replicated by rivals, and therefore the source of its uniqueness or competitive advantage (Davenport and Prusak, 1998). Modern KM practice emphasizes the creation of new knowledge and the timely application of organizational knowledge to maintain strategic advantage. It assumes that systems exist within an organization to support knowledge creation, and that relevant knowledge from internal and external sources has been recorded or indexed in such a way that it can be retrieved and used. Organizations have to be prepared to abandon knowledge that has become obsolete (Drucker, 1993). Different aspects of these processes and their relevance to information professionals have been discussed in some detail by Abell et al. (1999), Broadbent (1997), Davenport and Prusak (1998) and Klobas (1997). Klobas illustrated key relationships in a diagram, from which Figure 1 is drawn.



**Figure 1. Sources of knowledge, knowledge processes and outcomes of knowledge management**

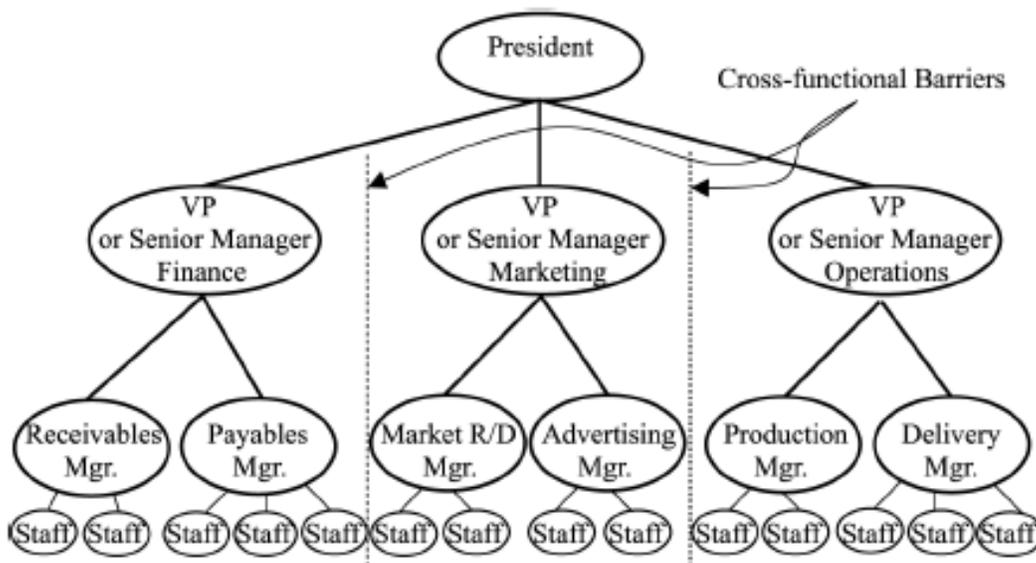
#### **4. Knowledge management structure for Processing Industry**

The worldwide economy has shifted from an industrial manufacturing/product oriented economy to one based on knowledge and services, where the principle commodity is information or knowledge. Effective management of intellectual capital is a critical issue

facing organizations in today's global and information-driven economy. Knowledge management is not really about managing knowledge, but rather managing and creating a corporate culture that facilitates and encourages the sharing, appropriate utilization, and creation of knowledge that enables a corporate strategic competitive advantage. Achieving a "knowledge culture" requires managerial focus in three areas: preparing the organization, managing knowledge assets, and leveraging knowledge for competitive advantage (Abell and Oxbrow, 1997). This article proposes a knowledge-based management structure that facilitates the development and maintenance of an organizational knowledge culture.

#### 4.1 Knowledge management structure

Traditional hierarchical management structures as displayed in Figure 2, allow vertical knowledge transfer through typical chain-of-command, but inhibit horizontal knowledge transfer that must cross the organization's functional boundaries. Increasing competition and ever shortening rates of technological change necessitate better transfer of knowledge across organizational boundaries (Gopalakrishnan and Santoro, 2004).



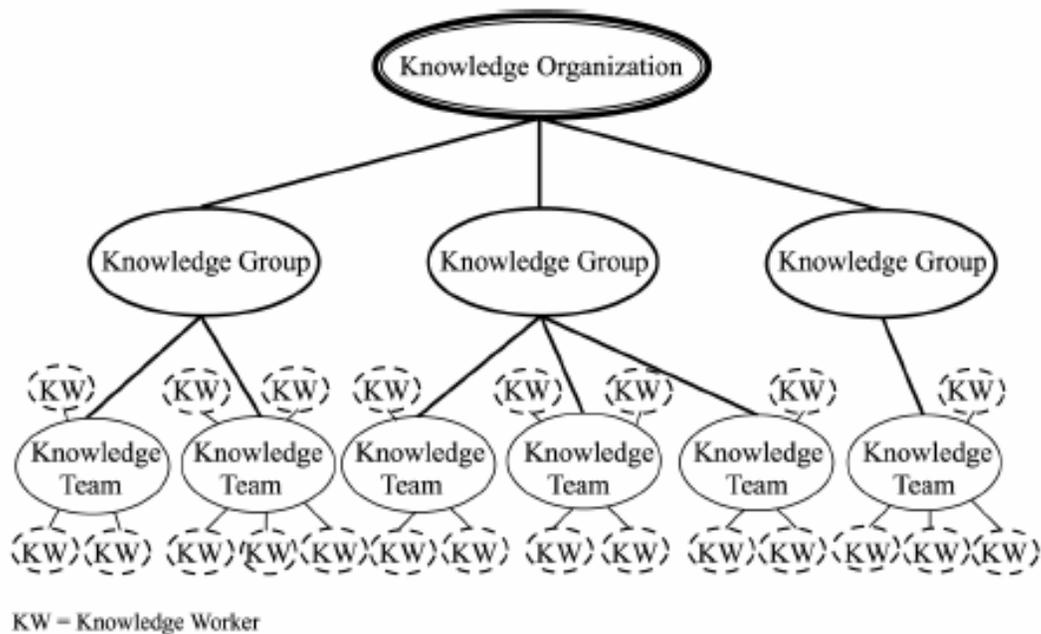
**Figure 2. Traditional organization management hierarchy**

The development of knowledge teams composed of knowledge workers from cross-functional areas of the organization is a first step towards developing a fully distributed

knowledge transfer system (both vertical and horizontal) within the organization. Cross-functional team members provide knowledge sharing from their knowledge team back to their original functional areas.

However, the scope of teams is limited to the organizational problem assigned to the team and results in limited knowledge sharing throughout the organization. The idea of teams and knowledge sharing must be extended to include all aspects of the organization. A knowledge team-based organizational structure is displayed in Figure 3. The knowledge organization of Figure 3 is composed of knowledge groups that are composed of knowledge teams, which are built from knowledge workers selected for participation on a knowledge team due to their tacit knowledge and skills. Ideally, the knowledge workers on any knowledge team come from different organizational (and educational) backgrounds and will bring a diversity of tacit knowledge and skills to the team.

Adoption of a new organizational structure (the “knowledge organization”) or managerial methodology (“knowledge culture”) faces resistance within the organization (Goh, 2003; Zammuto et al., 2000). Resistance to change may be minimized by reducing the perception of change for the stakeholders. Initially, the knowledge team management structure may be aligned to an existing hierarchical management structure by aligning the knowledge groups with the existing functional areas of the organization including: accounting, marketing, production, and research similar to the idea of communities of practice. Knowledge teams or intermediate groups of knowledge communities are then aligned with the subdivisions within each functional area.



**Figure 3. Elements of the knowledge organization hierarchy**

## Conclusions

A critical issue in adoption of knowledge management initiatives is the preliminary preparation of the organization to accept, adopt, and utilize new knowledge management processes. Preparing an organization for knowledge management initiatives means changing or adapting the organizational culture to facilitate, support, and encourage the sharing, utilization, and creation of knowledge. The knowledge organization management structure presented in this article facilitates the development of a “knowledge culture” within an organization by supporting the decision making of knowledge workers through collaboration in knowledge teams. Future research is needed to further investigate the relationship between degrees of knowledge management structure implementation within an organization and corresponding increases in organizational performance.

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