

# A Delphi study of knowledge management systems: Scope and requirements

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## Abstract

We empirically explored the roles and scope of knowledge management systems in organizations. Building on a knowledge-based view of the firm, we hypothesized and empirically tested our belief that more integration is needed between technologies intended to support knowledge and those supporting business operations. Findings from a Delphi study and in-depth interviews illustrated this and led us to suggest a revised approach to developing organizational knowledge management systems.  
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The knowledge-based view of the firm [9,31] has changed the value and role of knowledge management (KM) in organizations. This change has the potential to lead to subsequent adjustments in the scope of KM systems (KMS) in organizations. In this paper, we empirically examined – using the Delphi method and semi-structured interviews – how top managers perceived their KMS. Our objective was to provide empirical evidence for emerging views of these systems in the firm.

## 1. Background

Knowledge has long been considered an important organizational resource, and its effective management is

therefore crucial to success. Researchers have therefore studied KM in order to determine its contribution in managing and leveraging organizational knowledge.

A review of the KM literature shows the changing view of the focus of KM, resulting in different definitions (see, for example, Table 1) and different levels of technology support. In its early conceptualization stage, KM research focused on empowering the knowledge worker and providing support for organizations starting to adopt its methodology. On the technology side, the predecessors of KMS were executive information systems, decision support systems, and expert systems.

As KM gained popularity, the focus (in the mid to late 1990s) shifted into a practical approach—finding better ways to manage organizational knowledge.

Thus, many published definitions of KM were prescriptive, emphasizing specific activities of KM that could be captured, managed, or facilitated by IT. Consequently, KM definitions during the 1990s

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Table 1  
KM definitions

2006	“ Knowledge management addresses policies, strategies, and techniques aimed at supporting an organization’s competitiveness by optimizing the conditions needed for efficiency improvement, innovation, and collaboration among employees.” [30]
2005	“KM is defined as doing what is needed to get the most out of knowledge resources.” [23]
2003	“Knowledge management is defined as the organized and systematic process of generating and disseminating information, and selecting, distilling, and deploying explicit and tacit knowledge to create unique value that can be used to achieve a competitive advantage in the marketplace by an organization.” [12]
2003	“Knowledge management may be defined as doing what is needed to get the most out of knowledge resources. Knowledge management focuses on organizing and making available important knowledge, wherever and whenever it is needed.” [22]
2003	“Knowledge management concerns an organization’s ability to develop and utilize a base of intellectual assets in ways that impact the achievement of strategic goals.” [16]
2003	“We can conceptualize knowledge management as a process whose input is the individual knowledge of a person, which is created, transferred and integrated in work teams within the company, while its output is organizational knowledge, a source of competitive advantage.” [40]
2001	“Knowledge management refers to identifying and leveraging the collective knowledge in an organization to help the organization compete. . . . “Knowledge management is largely regarded as a process involving various activities . . . . At a minimum, one considers the four basic processes of creating, storing/retrieving, transferring, and applying knowledge.” [1]
1999	“Knowledge management is the formal management of knowledge for facilitating creation, access, and reuse of knowledge, typically using advanced technology.” [19]
1999	“Knowledge Management is a <i>business process</i> . It is the process through which firms <i>create</i> and <i>use</i> their institutional or collective knowledge. It includes three sub-processes: <i>Organizational learning</i> —the process through which the firm acquires information and/or knowledge <i>Knowledge production</i> —the process that transforms and integrates raw information into knowledge which in turn is useful to solve business problems <i>Knowledge distribution</i> —the process that allows members of the organization to access and use the collective knowledge of the firm.” [25]
1999	“Managing knowledge is a multidimensional process. It requires the effective concurrent management of four domains: content, culture, process, and infrastructure.” [5]
1998	“[a] term which has now come to be used to describe everything from organizational learning efforts to database management tools.” [21]
1996	“[t]he management of knowledge goes far beyond the storage and manipulation of data, or even of information. It is the attempt to recognize what is essentially a human asset buried in the minds of individuals, and leverage it into an organizational asset that can be accessed and used by a broader set of individuals on whose decisions the firm depends.” [14]
1994	“In its broadest sense, knowledge management (KM) is a conceptual framework that encompasses all activities and perspectives required to making the organization intelligent-acting on a sustained basis. KM includes activities to gaining overview of, dealing with, and benefiting from the areas that require management attention by identifying salient alternatives, suggesting methods for dealing with them, and conducting activities to achieve desired results.” [38]

included lists of specific manageable activities, such as knowledge creation, identification, codification, sharing, reuse, and application (see [11]).

KMS studies also followed the trend, with systems commonly being defined as technologies that support four KM activities: knowledge creation, codification, transfer, and application [1]. In addition, early KMS studies often focused on codification, i.e., capturing and representing organizational knowledge using IT (e.g. [2,17,37]). Much of the KMS research during this time therefore focused on specific technology solutions, such as discovery, representation, or dissemination [8,27]. Examples of specific tools included intelligent systems, DSS, various types of knowledge repositories and directories, and collaboration tools (see Appendix A and [14] for a review of theory-driven KMS classifications). Market driven classifications presented a similar

view, suggesting KMS categories such as knowledge repositories, knowledge discovery and mapping tools, e-learning suites, community builders, meta-search systems, enterprise knowledge portals, push-oriented systems, collaborations tools, and visualization and navigation systems.

Another key addition to KM research and practice during this period was the discussion of tacit and explicit knowledge, suggested by Nonaka [18], building on the work of Polanyi [20]. *Explicit knowledge* can be expressed using language or other formal representation and communicated easily but *tacit knowledge* is personal or hidden [39] and hard to formalize. Tacit knowledge can be technical – representing skills and crafts – or cognitive, referring to beliefs, ideas and mental models. The tacit/explicit distinction was perceived as especially relevant in the development

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