Chapter 2.6
Stages of Knowledge Management Systems

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Knowledge management systems refer to a class of information systems applied to manage organizational knowledge. These systems are IT applications to support and enhance the organizational processes of knowledge creation, storage and retrieval, transfer, and application (Alavi & Leidner, 2001).

The knowledge management technology stage model presented in this chapter is a multistage model proposed for organizational evolution over time. Stages of knowledge management technology are a relative concept concerned with IT's ability to process information for knowledge work. The knowledge management technology stage model consists of four stages (Gottschalk, 2005). When applied to law enforcement in the following chapters, the stages are labeled officer-to-technology, officer-to-officer, officer-to-information, and officer-to-application.

KNOWLEDGE TECHNOLOGY STAGES

Stages-of-growth models have been used widely in both organizational research and information technology management research. According to King and Teo (1997), these models describe a wide variety of phenomena: the organizational life cycle, product life cycle, biological growth, and so forth. These models assume that predictable patterns (conceptualized in terms of stages) exist in the growth of organizations, the sales levels of products, and the growth of living organisms. These stages are (1) sequential in nature, (2) occur as a hierarchical progression that is not easily reversed, and (3) involve a broad range of organizational activities and structures.

Benchmark variables are often used to indicate characteristics in each stage of growth. A one-dimensional continuum is established for each benchmark variable. The measurement of benchmark variables can be carried out using Guttman

scales (Frankfort-Nachmias & Nachmias, 2002). Guttman scaling is a cumulative scaling technique based on ordering theory that suggests a linear relationship between the elements of a domain and the items on a test.

In the following main part of this chapter, a four-stage model for the evolution of information technology support for knowledge management is proposed and empirically tested. The purpose of the model is both to understand the current situation in an organization in terms of a specific stage, and to develop strategies for moving to a higher stage in the future. We are concerned with the following question: Do organizations move through various stages of growth in their application of knowledge management technology over time, and is each theoretical stage regarded as an actual stage in an organization?

STAGES-OF-GROWTH MODELS

Various multistage models have been proposed for organizational evolution over time. These models differ in the number of stages. For example, Nolan (1979) introduced a model with six stages for IT maturity in organizations that later was expanded to nine stages. Earl (2000) suggested a stages-of-growth model for evolving the e-business consisting of the following six stages: external communication, internal communication, e-commerce, e-business, e-enterprise, and transformation. Each of these models identifies certain characteristics that typify firms in different stages of growth. Among these multistage models, models with four stages seem to have been proposed and tested most frequently (King & Teo, 1997).

In the area of knowledge management, Housel and Bell (2001) described a knowledge management maturity model. The knowledge management maturity (KMM) model is used to assess the relative maturity of a company's knowledge management efforts. The KMM model defines the following five levels (Housel & Bell 2001, p. 136):

1. Level one is the default stage in which there is low commitment to managing anything other than essential, necessary survival-level tasks. At level one, formal training is the main mechanism for learning, and all learning is taken to be reactive. Moreover, level-one organizations fragment knowledge into isolated pockets that are not explicitly documented.
2. Level two organizations share only routine and procedural knowledge. Need-to-know is characteristic, and knowledge awareness rises with the realization that knowledge is an important organizational resource that must be managed explicitly. Databases and routine tasks exist, but are not centrally compiled or managed.
3. Level three organizations are aware of the need for managing knowledge. Content fit for use in all functions begins to be organized into a knowledge life cycle, and enterprise knowledge-propagation systems are in place. However, general awareness and maintenance are limited.
4. Level four is characterized by enterprise knowledge sharing systems. These systems respond proactively to the environment, and the quality, currency, utility, and usage of these systems are improved. Knowledge processes are scaled up across the organization, and organization knowledge boundaries become blurred. Benefits of knowledge sharing and reuse can be explicitly quantified, and training moves into an ad hoc basis as the technology infrastructure for knowledge sharing is increasingly integrated and seamless.
5. Level five is where knowledge sharing is institutionalized and organizational boundaries are minimized. Human know-how and content expertise are integrated into