Chapter 1.7
Knowledge Management on the Web

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INTRODUCTION

The importance of knowledge management has been recognized both in academia and in practice. In recent years, corporations have started talking about knowledge management, organizational learning, organizational memory, and computerized support. A few years ago, Microsoft®'s awareness of knowledge management and corporate memory was demonstrated by Bill Gates through his keynote speeches in the second and third Microsoft's CEO summits that attracted quite a few CEOs and other corporate executives from Fortune 1000 companies. Gates (1998) outlined his vision through a term he coined "digital nervous system," which is an integrated electronic network that can give people the information they need to solve business and customer problems. An effective digital nervous system should include access to the Internet, reliable e-mail, a powerful database, and excellent line-of-business applications, and should transform three major elements of any business: the relationships to customers and business partners—the e-commerce element; the

information flow and relationships among workers within a company—the knowledge management element; and the internal business processes—the business operations element. The recent release of Windows® Tablet PC® edition is an example of a Microsoft tool that supports the concept of digital nervous system.

Even though knowledge management as a conscious practice is still young (Hansen et al., 1999), using information technology to support knowledge management is being explored and is well under way in many organizations. The Web technologies are not only changing the landscape of competition and the ways of doing business but also the ways of organizing, distributing, and retrieving information. Web-based technology is making effective knowledge management a reality, and Web-based knowledge management systems have been developed and deployed.

Currently, Web-based technology is enabling the management of knowledge at the document management level, in contrast to the traditional record-level data management. The record-level data management is basically the focus of tra-

ditional database management systems. The document level is higher than the record level. For example, we generally handle daily problems through communicating with each other by using documents and exchanging ideas or perspectives about an issue, rather than dealing with database fields or records. Document-level information management is generally viewed as a lower level of knowledge management.

In this chapter, Web-based knowledge management is explored. Four representative types of Web-based knowledge management models are identified and studied. The study of these models would shed light on the effective management of organizational knowledge, what should be contained in a knowledge management system, the levels of knowledge management support, and how knowledge management support systems can be technically implemented. This chapter is organized as follows. In the next section, some theoretical issues about knowledge management are reviewed. Then, it is justified why Web technology is an enabling technology to the effective knowledge management and why Web-based knowledge management is desirable. Then, the four types of Web-based knowledge management models are discussed and compared. Finally, the conclusion section summarizes the results of this chapter and discusses future directions of Web-based knowledge management.

BACKGROUND

Traditional Information Systems vs. Knowledge Management Systems

Traditional information systems were developed to capture data about daily business transactions (transaction-processing systems), and to access, process, and analyze those internal and external data to generate meaningful information to support management [management information system (MIS), decision support system (DSS),

or enterprise integration system (EIS)]. These traditional systems help make an organization operate smoothly. However, they were developed at a time when the importance of knowledge management was not recognized. They all emphasize quantitative data processing and analysis. But an effective organization does not rely on quantitative analysis alone to deal with its problems. The nonquantitative side, such as knowledge creation and management, mental models, document sharing, human communications, information exchange, and meaning making, play a great role in an organization's growth and development. Thus, the nonquantitative areas also need to be supported. Knowledge management systems are supposed to fulfill this role. In other words, knowledge management systems should complement traditional systems in providing nonquantitative side support. A difficult task is to define what needs to be contained in the knowledge management system. A lot of existing studies provide only theoretic suggestions. A study described and discussed 10 knowledge management frameworks (Holsapple & Joshi, 1999). These frameworks are generally concentrated on conceptual knowledge creation or knowledge-building activities. They may be useful in deciding what functions a knowledge management system should eventually provide, but they fall short in suggesting what should be contained in a knowledge management system and how such a system may be implemented. In this chapter, the study of four types of Web-based knowledge management models should provide some practical advice about the content of a knowledge management system.

Knowledge vs. Information vs. Data and Knowledge Management

Commonly agreed, data is often defined as the raw facts, and information as the processed data. Davenport and Prusak (1998) defined knowledge as "a combination of experience, values, contextual information, and expert insight; and knowl-

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