Organizational Knowledge Management

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Significant payoff potential exists for organizations that effectively exploit artificial intelligence technologies to manage organizational knowledge. The fundamental concepts of knowledge management, knowledge acquisition, knowledge representation, and knowledge utilization are examined in light of the unique characteristics of organizational problems. Key areas where these technologies can be applied in organizational settings are discussed, including document processing, organizational learning, information systems management, and group decision support systems. Managerial issues regarding worker resistance, competitive advantage, and cost of adopting knowledge management technology are also considered.

Introduction

Knowledge about how to run an organization is an enormously valuable corporate asset. Currently, this knowledge is embedded in managers’ minds, and is difficult to replace as managers come and go. If this knowledge could be externalized, managed, used, and shared, the payoff to the organization could be immense.

Information systems containing this knowledge could reduce managerial training time and cost, lead to better managerial decisions, reduce the time lost awaiting routine authorizations, reduce the number of managerial layers in an organization, accelerate response times in customer service areas, and assist in scheduling who should attend important meetings as well as determining an appropriate time and place for the meeting. As information systems utilize more sophisticated knowledge management techniques, the system begins to take a more active role in the operations of the firm. Thus, employees can shift their attention from the administrative details of the firm’s operations (which do not generate revenue) to providing a better product or service (which does generate revenue).

The situation regarding organizational
knowledge may be compared with organizational treatment of data a few years ago. The asset value of data was largely unrecognized, and data was often poorly managed, inaccessible, and un sharable. Only in the last ten to fifteen years have organizations begun to try to harness the information potential in organizational data files. Now, large-scale integrated, shared databases are becoming commonplace.

However, the potential asset value of corporate knowledge dwarfs the value of data in organizational databases. The value of organizational knowledge may be estimated in several ways. For example, organizational knowledge value is reflected in the cost to obtain patents and copyrights, which are means of protecting organizational knowledge. The salary and benefits paid to retain key personnel reflect the cost of retaining organizational knowledge. Training expenses are another organizational knowledge cost. All of these costs are incurred by organizations to advance the production and retention of organizational knowledge.

The problem, of course, is how to externalize and harness this knowledge, how to manage it, and how to make it accessible to appropriate people throughout the organization. Managing large knowledge bases is, at present, a very difficult problem — much more complex than data management. In this paper, we describe some of the aspects of knowledge management technology, which consists primarily of techniques and software for developing expert systems, and discuss how knowledge may be captured, managed, and shared in an organizational setting. Many of the techniques that we discuss are still in the laboratory stage of development. Nevertheless, these techniques show promise of payoffs heretofore unheard of in the managerial use of computers.

Fundamental Aspects of Knowledge Management

Understanding the potential of knowledge management technology requires an examination of three fundamental areas of knowledge work: (1) knowledge acquisition, (2) knowledge representation, and (3) knowledge utilization. (See Figure 1.)

Knowledge Acquisition. Knowledge acquisition involves the process of obtaining knowledge about a problem area from people, documents, books, and other sources. Typically, knowledge acquisition activities focus on "extracting" knowledge from an expert in a particular problem area. Knowledge acquisition in organizational systems is a multi-dimensional problem in that several "experts" are usually involved (Kim & Courtney, 1988).

While expertise may be easily identified in areas such as mathematics, engineering, and medicine, expertise in business is more difficult to identify. This situation is caused by the inherent characteristics of business (Paradice & Courtney, 1986). Mathematics, engineering, and, to a lesser extent, medicine, are fields that have well-formulated relationships (Basden, 1983). Mathematics and engineering have infallible laws that govern relationships between components of the field. In medicine, certain
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