Article

Use of analytic network process (ANP) in selecting knowledge management strategies



To maintain competitive advantage, companies need to have and direct successful knowledge management (KM) strategies which are difficult to imitate. However, various critical factors such as determinants, dimensions, and enablers which affect the evaluation of a successful KM strategy have not been systematically investigated. This gap should be bridged by providing a good insight into the use of analytic network process (ANP) in selecting an appropriate KM strategy.

A comprehensive ANP framework presents a roadmap for selecting an appropriate KM strategy; and, compared to the human-oriented KM strategy (HKM) and system-oriented KM strategy (SKM), a dynamic KM strategy (DKM) can lead to a more targeted improvement in terms of knowledge transparency, knowledge sharing and communication. The ANP model, with minor modifications, can be useful to all firms in their KM strategy selection decisions.

The developed ANP model provides firms with a simple, flexible, and easy to use approach to evaluate KM strategies efficiently. However, ANP is a highly complex methodology and requires more numerical calculations in assessing composite priorities than the traditional analytic hierarchy process (AHP) and hence it increases the effort.

Selecting a suitable KM strategy

While the selection of a suitable KM strategy is an important component of organization's success, very little research has devoted explicit attention to this issue. ANP has the ability to be used as a decision-making analysis tool since it incorporates feedback and interdependent relationships among decision criteria and alternatives. In addition, it gives valuable information and guidelines which hopefully will help the KM managers to evaluate KM strategies through their organizations in an effective way.

It is widely recognized that knowledge is a valuable strategic resource for firms to remain competitive, and adequately respond to the needs of their customers. As knowledge is created and disseminated throughout the firm, it has the potential to contribute to the firm's value by leveraging its capability to respond to new situations. In this context, one of the most important items for the effective sharing of knowledge is a clear and conscious KM strategy. Therefore, there is growing realization that firms are increasingly relying on KM strategies in their pursuit of this unique resource.

KM strategies require the organizational optimization of knowledge resources, such as human power, capital, and managerial efforts, to achieve enhanced performance through the use of various methods and techniques. Also, appropriate KM strategies can be accomplished by various approaches such as building an information technology (IT) infrastructure, structuring a learning organization, fostering a

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knowledge-oriented culture, establishing knowledge-based systems, leveraging intellectual capital, and executing KM projects and programs. Therefore, KM and related strategy concepts are promoted as important components for organizations to achieve superior competitive advantage.

Much of the existing research on KM has concentrated on various critical factors that influence the success of a KM strategy, such as people, organizational structure and processes, strategy, culture, resources, training and education, measurement, and technology. These critical factors enable the organization to apply maximum effort and commitment to creating, sharing, applying, and improving its knowledge.

Although these factors are essential for a firm's capability to manage knowledge effectively, it is still unclear how to incorporate them in a complex decision environment. By managing and integrating all the various factors in a comprehensive decision framework, managers take the first step not only to increase competitiveness, but also to improve organizational success.

Multi-criteria decision-making (MCDM)

Multi-criteria decision-making (MCDM) methods that involve multiple, and usually conflicting criteria allow decision makers to deal with complex evaluation problems to achieve a certain goal. Among these MCDM models, AHP and ANP are very widely used methods to solve such problems. In AHP, a multi-level hierarchy considers the distribution of a goal amongst the decision criteria and alternatives being compared, and judges which element has a greater influence on that goal.

Some decision-making problems cannot be solved by examining the interactions among goals, criteria, and alternatives since they may involve dependencies in higher/lower level elements. AHP is a limited approach since it assumes independence among the elements of a hierarchy. In contrast to AHP, ANP considers a network system in which all criteria and alternatives involved are connected that accepts various dependencies. Therefore, ANP has the ability to consider feedback and to connect clusters of elements. It can also measure all relevant criteria, such as the determinants, dimensions, and enablers of KM strategies, in the model in arriving at the best decision. Even more important, ANP is relatively new and there are few applications due to its complexity and time-consuming nature. Some examples of its applications include balanced scorecard, business process improvement, supplier selection, project selection, quality function deployment, energy policy planning, and total quality management decisions.

Knowledge management strategies

A growing body of KM research has examined the range of KM strategies, and attempted to classify them. One strategy emphasizes the capability to help create, store, share, and use an organization's explicitly documented knowledge. In this strategy, explicit knowledge is carefully classified and stored in databases ready to be accessed and used by anyone in the company. This strategy is a system-oriented strategy. System-oriented strategy attempts to increase organizational efficiencies by codifying and reusing knowledge mainly through advanced IT. By contrast, another strategy concentrates on the belief that the most valuable knowledge is tacit knowledge existing in people’s heads, and communicated through direct person-to-person contacts and through social relationships. This strategy can be referred to as human-oriented strategy. In this strategy, the process of acquiring knowledge through people’s beliefs and experiences is time consuming, expensive and slow. Thus, efficient transmission of tacit knowledge requires its codification into explicit formats.

It is important for an organization to understand which KM strategies it should focus on under various circumstances. Some studies suggest a complementary

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relationship among KM strategies while others insist that KM strategies are better followed in isolation. Several authors suggest that companies should mainly focus on a single strategy while using another to support it. Yet more propose that a human-oriented strategy is superior to system-oriented strategy. Others suggested that a focused strategy is superior to the other strategies. It has also been posited that the impact on organizational performance is higher with system-oriented strategy than the human-oriented one. However, there is a compelling argument that organizations should pursue a balanced approach to KM which calls for the combining of KM strategies appropriately. Firms, which acquire and share knowledge by combining system and human-oriented strategies, tend to be more profitable. A complementary set of human and system-oriented strategies result in higher performance. This dynamic KM strategy integrates the conceptual scope of system and human-oriented KM (HKM) strategies. It emphasizes both explicit and tacit knowledge. Combining tacit and explicit knowledge also involves sharing knowledge. Sharing of knowledge makes existing knowledge more productive and helps create new knowledge. It is necessary to take account of different criteria in the practice of selecting the suitable KM strategy.

Evaluation of KM strategy

Evaluating the KM strategy is not a well defined or structured problem in literature. This kind of problem has some special characteristics that make it different from other MCDM problems. First, a rational decision in KM strategy is to take into account careful examination of company's unique needs and expectations. Thus, strategic, technological, cultural, and financial aspects of KM strategy must be carefully considered in the decision process. In other words, finding the most suitable KM strategy requires careful screening of unique resources and capabilities of a company and can be a time consuming process. Second, selection criteria for evaluation of KM strategy may be tangible or intangible, objective or subjective, etc. So, decision criteria may not be independent of each other, and moreover, there may even be relationship among some criteria. Accordingly, organizations should consider these dependent relations between their decision criteria when selecting KM strategies.

ANP – a robust decision tool

ANP is a robust decision tool for decision making across multiple criteria. It has been used in many applications across many fields. The facilitation of knowledge sharing through informal networking, and the establishment of common language for knowledge codification, would be realized by using DKM strategy. As compared to the HKM and SKM, DKM strategy is also superior on criteria like cost, time, quality, and flexibility.

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