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A dynamic taxonomy for managing knowledge assets

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Abstract

In the last decade, knowledge asset management has attracted great attention in both academia and in business. Many researchers have used various perspectives to propose taxonomies for classifying knowledge assets. As knowledge assets never change their type once they have been classified, we argue that these taxonomies should be regarded as "static". This is mainly because existing taxonomies classify knowledge assets by their peculiarities rather than by their environmental factors.

Unlike previous studies, this study proposes a "dynamic" taxonomy, using two dimensions: "impacts on sustainability of competitive advantage (SCA)" and "impacts on appropriability". This classifies a firm's knowledge assets into four types: core knowledge assets, dynamic knowledge assets, supportive knowledge assets and low-value knowledge assets. The proposed taxonomy possesses two main characteristics: one is of it being dynamic and the other is its alignment with strategy.

To elaborate this taxonomy, several examples related to the four types of knowledge assets are presented and several propositions are introduced in this study.

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1. Introduction

Recently, knowledge management has attracted many business managers' attention, so a large number of firms intend to conduct knowledge management initiatives in order to obtain competitive advantage. During this process, however, the first challenge a firm inevitably confronts is how to identify the firm's knowledge assets.

To this end, a variety of taxonomies for classifying knowledge assets have been proposed in the literature (Hall, 1992, 1993; Kogut and Zander, 1992; Nonaka et al., 2000; Housel and Bell, 2001; Marr et al., 2004; Debowski, 2006). The taxonomies in previous research classify knowledge assets by either their repositories in a firm or their functions. In existing taxonomies, knowledge assets never change their type once they have been classified and so this study argues that these taxonomies should be regarded as "static" ones. Undoubtedly, these taxonomies

can help a firm to manage their knowledge assets, but we believe that these existing static taxonomies cannot assist a firm in when it comes to aligning knowledge asset management with a firm's strategies.

Hence, this paper focuses on proposing a novel taxonomy to remedy the deficiencies of existing taxonomies. We supposed, to begin with, that if the underlying dimensions of a taxonomy are highly related to the formulation of a firm's strategies, then the taxonomy may also possess high relevance with a firm's strategies. Then, we surveyed the literature for suitable dimensions, and concluded that "sustainability of competitive advantage (SCA)" and "appropriability" are appropriate, because both are significant measures of a firm's strategies.

From this, we use "impacts on SCA" and "impacts on appropriability" as two dimensions to construct a novel taxonomy and classify knowledge assets of a firm into the following four types: core knowledge assets, dynamic knowledge assets, supportive knowledge assets and low-value knowledge assets. By measuring the dimensions, all knowledge assets in a firm can be classified into one of the four categories based on this taxonomy.

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In addition, there is an interesting finding that most knowledge assets eventually change their types within the taxonomy as "impacts on SCA" and "impacts on appropriability" of knowledge assets change. This implies that the proposed taxonomy has the characteristic of being dynamic rather than static.

At the same time, a firm can recognize the distribution of all its knowledge assets in this taxonomy and so can be a great help to formulate a firm's strategies. This suggests that the proposed taxonomy has great potential to make a close linkage between knowledge assets management and a firm's strategies.

This study proposes a novel taxonomy to extend our understanding of knowledge assets by taking a dynamic view and makes a contribution to academic researchers as well as business practitioners. For academic researchers, the proposed taxonomy can lead to further research directions such as the transformation of knowledge types and the analysis of a variety of knowledge gaps. Practitioners, on the other hand, can use this taxonomy to investigate all knowledge assets in a firm and the result can suggest directions of knowledge assets development and strategies formulation.

The next section is a review of the key literature in relevant arenas. In Section 3, the determinants of the two dimensions underlying the taxonomy are discussed, and the novel taxonomy is proposed. Exhaustive explanations, examples and propositions for the proposed taxonomy are presented in Section 4. The discussion and implications for academic researchers and business managers are addressed in Section 5. The final section contains the conclusion of this paper.

2. Literature review

This section discusses major theories and concepts through related literature.

2.1. SCA and knowledge-based view

The literature with regard to how firms can obtain SCA is mainly based on two key viewpoints: industrial organization view (IOV) and Resources Based View (RBV) (Caloghirou et al., 2004). The IOV, vigorously developed in the 1980s, argues that firms' SCA primarily relies on the strategic positions in the competitive market and its intention is to explain how the external environmental factors influence a firm's benefits (Aaker, 1984; Coyne, 1986; Porter, 1985).

Next, RBV, germinated in the 1980s (Wernerfelt's, 1984) and intensively developed in the 1990s, stresses that resources and capabilities that possess the idiosyncrasy of heterogeneity and inimitability are the crucial sources of SCA. Therefore, RBV suggests that firms should endeavor to develop their own peculiar resources and capabilities and thereby formulate their strategies (Aaker, 1989; Prahalad and Hamel, 1990; Grant, 1991; Barney, 1991;

Javidan, 1998). However, RBV does not over-stress analysis inside the firm and disregard the firm's external environment, but instead combines the two (Collis and Montgomery, 1995).

In the last decade, RBV received more attention and gave rise to fairly extensive discussions in the fields of strategic management, economics and organizational theories (Galbreath, 2005). Why is RBV so fascinating? The main reason is that it contains the following two premises: first, the resources and capabilities within a firm offer precise strategic directions. Second, the resources and capabilities within a firm are the major sources of a firm's profits (Grant, 1991). Therefore, through identifying and appraising resources and capabilities, a firm can establish the foundation for acquiring SCA. In other words, RBV describes how a firm can achieve differentiation and acquire SCA (Hoskisson et al., 1999).

Two extensions of RBV are made for the sake of a broader application. One extension is knowledge-based view (KBV), which regards a firm as a heterogeneous knowledge production entity (Foss, 1996). KBV stresses that knowledge, especially tacit knowledge, is the very source of SCA (Slater, 1996; Barney and Wright, 1998; Lubit, 2001; McEvily and Chakravarthy, 2002; Dehning and Stratopoulos, 2003). Consequently, it seeks to develop knowledge creation and transformation models, and suggests that corporate culture, management systems, operational systems and resource management are the crucial sources of competitive advantage (Flamholtz and Hua, 2003). The other extension is dynamic capabilities (DC), which points out that traditional RBV seems unlikely to explain why some firms can still maintain a competitive advantage in a turbulent context. In such a market, dynamic capabilities become the primary source of firms' SCA (Teece et al., 1997).

We can observe a firm in the light of ideas that originated from Polanyi (1966), who also classified knowledge into explicit knowledge and tacit knowledge. His assertion "We can know more than we can tell" clearly implies the existence of a tacit dimension in knowledge. Although scholars state that a firm's competitive advantage stems from the ability of knowledge creation and transformation (Kogut and Zander, 1992), the result of these behaviors without social communities in a firm would be limited (Zander and Kogut, 1995). In addition, Grant (1996a, b) argues that knowledge transfer is not an efficient approach to knowledge integration, so the pivotal job of management is to build up the coordination needed during the process of knowledge integration, which emphasizes the importance of knowledge integration mechanisms in a dynamic environment. Nonaka has also noticed the importance of contextual issues to knowledge creation and after his proposing the socialization–externalization–combination–internalization (SECI) model. Nonaka and Conno (1998) further suggested the Ba model and stress that it should be considered while using the SECI model. The SECI model suggests that knowledge is created