Validating Distinct Knowledge Assets:
A Capability Perspective

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ABSTRACT
Identification and measurement of organizational knowledge management capabilities is necessary to determine the extent to which an organization utilizes its knowledge assets. We developed and operationalized a set of constructs to measure capabilities associated with management of knowledge assets identified as distinct knowledge capabilities (KCs) comprising the overall knowledge management (KM) capability of an organizational unit. Each KC represents a distinct kind of knowledge that requires different organizational process and technological support. This delineation of knowledge allows targeted improvement to a specific KC. We present validation of these capability constructs with empirical evidence from two separate business units in a large semi-conductor manufacturing company, providing the basis of measurement standardization for KM capability improvement. Confirmatory factor analysis affirmed four KCs, each identified as an overall factor influencing a set of latent descriptor variables. Second order and general-specific structural equation models of each capability provide evidence as to the validity of measurement of these knowledge assets.

Keywords: intangible resources; knowledge asset; km capability; knowledge capabilities; knowledge management; structural equation modeling (SEM)

INTRODUCTION
The quest to leverage knowledge assets through effective knowledge management (KM) is a strategic initiative for many firms. Management literature has noted the lack of effective management of knowledge and called for establishing quantitative measures for these intangible assets (Teece, 1998; Zack, 1999b). Unfortunately, most KM initiatives in reality have been information projects that result in only the consolidation of data and not much by way of improvements in knowledge flows or knowledge sharing (Gold et al., 2001). In an attempt to assess the contribution of IS/IT initiatives to a firm’s sustainable competitive advantage, researchers in the IS domain have looked at IT resources and capabilities through the lens of the Resource Based View of the firm (Barney, 1991; Melville et al., 2004). Both IS
and KM researchers have viewed resource and capability investments as impacting organizational effectiveness (Tanriverdi, 2005). However, a consistent shortcoming has been the inadequacy in measurement of these resources and capabilities (Wade & Hulland, 2004). In order to evaluate KM initiatives and their ability to leverage knowledge assets, firms must focus on the identification and measurement of specific knowledge assets and the capabilities that they represent within an organization. Only through adequate conceptualization of knowledge and measurement of capabilities associated with its management can firms begin to tie knowledge assets to value generating outcomes. Thus, capability measurement is the logical first step in justifying investments in KM projects that can ultimately move the firm towards a sustainable competitive advantage.

Knowledge assets are grounded in the experience and expertise of individuals (Teece, 1998). The ability of an organization to use them has been portrayed as a type of organizational capability in prior research. We use the term KM Capability to refer to this overall organizational capability. The conceptual development of KM Capability can benefit from the rich theoretical literature on capability research which associates organizational capabilities (of various kinds) with its performance (Gold et al., 2001; Santhanam & Hartono, 2003; Zhu, 2004). Knowledge is still a highly nebulous and debated concept in business literature and it collectively covers a wide range of intangible assets. For this reason it is desirable to classify this concept into multiple types and try to study the capabilities associated with each type separately.

Research efforts at understanding KM Capability and its association with organizational effectiveness have attempted to define multiple KM related constructs. Gold et al. (2001) proposed that the overall KM Capability consists of knowledge process capability and knowledge infrastructure capability with both impacting organizational effectiveness. In their model, process capability incorporates the stages of lifecycle through which knowledge progresses. The knowledge infrastructure capability includes technology, structure and culture as its building blocks. Their notion of organizational knowledge views all knowledge similarly and fails to recognize different types of knowledge that KM capability must incorporate. Tanriverdi (2005) presents KM capability as a second order capability comprised of an organization’s product, customer and managerial KM capability. Each of these first order constructs comprised four stages of the knowledge lifecycle. In this case, generic forms of the knowledge lifecycle stages have been used for each first order construct which implies a separation of processes. We assert that organizational knowledge covers a wider range of assets and propose that different types of knowledge assets require different organizational processes and technology support to be utilized effectively.

Another significant attempt at conceptually defining a framework for measuring KM capability is the cognizant enterprise maturity model (CEMM) that introduced the concept of measuring 15 key maturity areas within an organization to improve its business value through KM (Harigopal & Satyadas, 2001). While the CEMM identifies a multitude of knowledge processes through the key maturity areas, knowledge is differentiated only through their discussion of tacit and explicit knowledge. Each of these frameworks has provided valuable steps toward understanding the nature of KM within an organization. However, none have identified separate capabilities in distinct knowledge areas that may be individually measured and leveraged within a single organization to more effectively meet its objectives.

The objective of this research is to further develop and validate a set of knowledge capability (KC) measures that accurately capture a firm’s overall KM capability (Freeze & Kulkarni, 2007). Each KC is the knowledge related capability of an organization within a particular knowledge type. We draw upon previously identified KM application areas such as knowledge repositories, lessons learned, expert networks and communities of practice, etc. (King et al.,
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