The Power of Unstructured Data: A Study of the Impact of Tacit Knowledge on Business Performance

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ABSTRACT

This study examined the incorporation of tacit knowledge into corporate business intelligence and its impact on business performance, specifically analyzing individual productivity. Business productivity in relation to the use of knowledge has been investigated but using macro-dimensions not specifically oriented to individual workers’ productivity. This study was based on externalization, one of the modes in the theory of organizational knowledge creation (that is, converting tacit knowledge into explicit knowledge). The findings on the literature stated that knowledge is the most important piece of business competitive advantage and that tacit knowledge is a key part of that knowledge. This research found that tacit knowledge did not influence individual engineers’ productivity and as such did not affect business performance. Additionally, it found that tacit knowledge was not a factor that could be used to predict individual productivity. This research was the first attempt to investigate individual productivity in relation to tacit knowledge.

KEYWORDS

Artificial Intelligence, Explicit Knowledge, Semantic Web, Social Networks, Tacit Knowledge

INTRODUCTION

Based on the literature, it can be argued that knowledge is the most important piece of business competitive advantage, that tacit knowledge is a key part of that knowledge, and that tacit knowledge resides in people’s heads. Additionally, corporations possess vast amounts of unstructured data waiting to be extracted and processed with the potential to be converted into knowledge.

Moreover, it can be argued that using externalization, one of the modes of the Nonaka (1994) theory (that is converting tacit knowledge into explicit knowledge), can increase business performance. According to Cheung, Lee, and Wang (2005), 80% of organizations’ data are stored in some form of unstructured data, and that these data hide an enormous potential in terms of supporting business performance and information in general. Transactions, databases, records, keys, and attributes typify the structured environment. E-mail, spreadsheets, medical records, documents, and reports typify the unstructured environment (W. H. Inmon & Nesavich, 2009). Unstructured data contain valuable corporate business information, and, according to Negash (2004), 60% of chief information officers and chief technology officers consider unstructured data very critical for the business. Why is it that unstructured data are not being processed and integrated into the business intelligence (BI) schema?
The answer to the previous question may be in the complexity to process the data (Abidin, Idris, & Husain, 2010; Rao, 2003; Srivastava & Cooley, 2003) or the failure to see its impact in business performance, but incorporating unstructured data into the business schema is not an impossible task. The knowledge obtained from unstructured data when incorporated in the BI process has the potential to support and enhance the current businesses (Chang Lee, Lee, & Kang, 2005; Goel, Rana, & Rastogi, 2010; Mezher, Abdul-Malak, Ghosn, & Ajam, 2005; Mundra, Gulati, & Vashisth, 2011). This proposed research evaluated if incorporating tacit knowledge and unstructured data into the business intelligence schema impacted business performance.

BACKGROUND

In his seminal work, Nonaka (1991) introduced the concept of perceiving the company as “a living organism. Much like an individual, it can have a collective sense of identity and a fundamental purpose and not as a machine for information processing” (p. 8). Nonaka (1994) expanded his previous work and postulated the theory of organizational knowledge creation. He explained that knowledge possessed by individuals, organizations, and societies can be expanded through a spiral process in which tacit knowledge is converted into explicit knowledge, and then back into tacit. Tacit knowledge is hidden behind behaviors, skills competencies, and experiences (tacit actionable knowledge); articulated knowledge resides in individual thoughts and language use. Explicit knowledge resides inside computers in codified form, and by nature has a clear organization (Delen & Al-Hawamdeh, 2009).

Regarding tacit knowledge, Polanyi (1966) stated, “I shall reconsider human knowledge by starting from the fact that we can know more than we can tell” (p. 4). He also declared, “We recognize the moods of the human face, without being able to tell, except quite vaguely, by what signs we know it” (Polanyi, 1966, p. 5), and he classified this human characteristic as tacit knowledge, a knowledge that is hard to formalize and communicate. He further stated, “I think I can show that the process of formalizing all knowledge to the exclusion of any tacit knowing is self-defeating” (Polanyi, 1966, p. 20). As Immon and Nesavich (2009) noted, “Stated differently, organizations that look only at their structured data—usually transaction-based data—miss an entire class of information that waits to be used for the decision-making process” (p. 11). Accordingly, this research is trying to demonstrate the extreme importance of tacit knowledge and its impact to increase business performance.

Nonaka (1994) also provided an interpretation of tacit and explicit knowledge: ‘Polanyi classified human knowledge into two categories. ‘Explicit’ or codified knowledge refers to knowledge that is transmittable in formal, systematic language. On the other hand, ‘tacit’ knowledge has a personal quality, which makes it hard to formalize and communicate” (as cited in Nonaka, 1994, p. 16). Nonaka (1994) called the distinction between tacit and explicit knowledge the epistemological dimension to organizational knowledge. The exchange can take many forms and, based on these variations, different modes of knowledge conversion can be generated: (a) tacit to tacit, which is a shared experience and is called socialization, (b) explicit to explicit, in which modern computers play an important role, and it is called combination. The third and fourth modes are a combination of the first two, converting explicit into tacit, called internalization, and converting tacit into explicit, called externalization.

On the ontological dimension, the theory posits that individuals are the ones who create knowledge and that an organization should amplify this knowledge through the different levels of the firm. The key here is the constant dialogue in which a middle-up-down management leadership is the most suitable to crystallize the conversion and creation of knowledge. Nonaka (1994) used the metaphor of the orchestra, in which each musician plays his or her part, and the conductor coordinates the effort, producing a clean and coordinated melody. In this context, the middle manager is the bridge between
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