Using knowledge management systems: A taxonomy of SME strategies

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An introduction to knowledge management systems (KMSs) among small and medium enterprises (SMEs) and to propose a taxonomy that synthesises the strategies of using KMSs on the part of SMEs. Starting from a literature review on KMSs by SMEs and from a focus group with consultants/researchers operating in the field of information technology in SMEs, an empirical investigation was designed, developed and conducted through semi-structured interviews involving 61 selected SMEs operating in high tech industries. The paper highlights three main issues regarding the use of KMSs. Firstly, SMEs adopt and use more intensively traditional tools (KM-Tools) rather than new and more updated ones that are generally cheaper and easier to use. Secondly, SMEs adopt and make more intensive use of practices (KM-Practices) that do not exclusively focus on the knowledge management process, but seek to adapt practices they already know to the requirements of knowledge management. Finally, the paper points out that there is a relationship of reciprocity between KM-Tools and KM-Practices: one reinforces the other and vice versa. The paper proposes a taxonomy bringing together SME strategies for using KMSs. Specifically, four strategies are identified: guidepost, explorer, exploiter, and latecomer.

1. Introduction

A wide range of literature highlights the pivotal role now played by knowledge management (KM) in the competitiveness of large and small and medium enterprises (Al-Mutawah, Lee, & Cheung, 2009; Cerchione, Esposito, & Spadaro, 2016; Dyer & Hatch, 2006; Esper, Ellinger, Stank, Flint, & Moon, 2010; Gottschalk, 2000; Gunasekaran & Ngai, 2007; Lakshman & Parente, 2008; Lee, Wang, & Lin, 2010; Samuel, Gouy, Gunasekaran, & Spalanzani, 2011). Regarding the introduction of knowledge management in small and medium enterprises (SMEs), practitioners and academics agree that SMEs follow in the wake of large companies in developing KM practices. This is reflected in the literature on the topic, where little research and, most notably, few empirical studies have been carried out on SMEs. Nevertheless, papers on the topic have been increasing in recent years, and the scenario is rapidly evolving (Durst & Edvardsson, 2012).

Within this scenario, Information and Communication Technologies (ICTs) are playing a vital role in the development of knowledge management (Bolisani & Scarso, 1999; Benbya, Passiane, & Belbaly, 2004; Chua, 2004; Adamides & Karacapilidis, 2006). On the one hand, the literature highlights that ICTs are reducing the weight of the human and financial barriers hindering the spread of knowledge management (Milosz & Milosz, 2010; Nunes, Annansingh, & Eaglestone, 2006). This issue is crucial, as nowadays the technological and innovation trend in ICTs is driving the development and the introduction of new knowledge management systems, which are creating new opportunities for SMEs as they are cheaper, more user-friendly and more effective than the traditional ones (Antonelli, Geuna, & Steinmueller, 2000; Esposito & Mastroianni, 2001; Garrigos-Simon, Lapedra Alcami, & Barbera Ribera, 2012; Matlay & Westhead, 2005). On the other hand, the literature on KM in SMEs shows that small and medium enterprises are not simply a scaled-down replica of large firms (Egbu, Hari, & Renukappa, 2005; Desouza & Awazu, 2006; Sparrow, 2001; Wong & Aspinwall, 2005; Wong, 2005). Nevertheless, it is not clear what makes the SME different. It seems that the SME is an entity without a strategy of its own for addressing the processes of knowledge management, and furthermore it is not clear what knowledge management systems they use.

Within this context, the paper has a dual aim. Firstly, to identify an exhaustive taxonomy of knowledge management systems used by SMEs, evaluating how intensively they are used, and secondly, to

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propose a taxonomy of SME strategies addressing the processes of knowledge management. These results are obtained through desk analysis and semi-structured interviews carried out on a sample of selected SMEs.

The paper is organised into seven sections. Following this introduction, the second section deals with the literature review on KM in SMEs and three research questions are suggested. In the third section, a taxonomy of KM-Tools and a taxonomy of KM-Practices are identified. The fourth section describes the research methodology and the context of investigation. The degree of diffusion and the intensity of use of KM-Tools and KM-Practices are illustrated and discussed in the fifth section. The sixth section proposes a taxonomy of SME strategies. Finally, the conclusions and implications are illustrated.

2. Literature review

This section proposes a systematic review to analyse the state of the art of the literature on the subject of KMS in SMEs. A systematic review is an overview of primary studies that use explicit and reproducible methods (Greenhalgh, 1997). According to Greenhalgh, Pittaway et al. (2004) propose a systematic literature review organised into ten steps. Petticrew and Roberts (2006) define a systematic review as a “review that strives to comprehensively identify, appraise and synthesize all relevant studies on a given topic” and suggest a review process organised into 12 steps. Easterby-Smith, Thorpe and Jackson (2012) identify two main processes in a systematic review. The first consists in defining the review protocol and mapping the field by accessing, retrieving and judging the quality and the relevance of studies in the research field under investigation. The second describes findings to identify gaps in the existing body of knowledge.

According to this approach, it is possible to identify two main phases:

1. A paper selection phase
2. A content analysis phase

The first phase includes the identification of key words, the construction of search strings, the choice of databases to be investigated (Scopus, Web of Science, etc.), a review of the databases using the search strings, the selection of papers to be analysed in detail, the definition of criteria for inclusion/exclusion, and the process of selection according to the inclusion/exclusion criteria.

In the second phase, the selected papers are reviewed and studied in depth in order to highlight strengths and weaknesses in the literature, evidence research gaps, and identify appropriate research questions to be investigated.

2.1. Papers selection

In order to ensure a high level of rigourousness, the search was conducted using two academic databases (Scopus and Web of Science) from 1960 until 2014 and a set of selected keywords such as “KMS”, “knowledge management system”, “knowledge management tool”, “knowledge management practice” was used in combination with “SME”, “small firm”, “small business”, “small and medium enterprise”. Initially, a total of 243 hits were found, as shown in Table 1.

In order to focus on the research products closer to the topic under investigation, three criteria for the inclusion/exclusion of research products were defined as reported in Table 2.

The first criterion follows the approach proposed by Pittaway et al. (2004). It makes it possible to only select papers whose abstracts focus on knowledge management systems in the context of SMEs. In order to meet this objective, the abstracts of the 243 papers were read in parallel by two researchers, plus a third in the event of uncertainty. In line with Petticrew and Roberts (2006), Easterby-Smith et al. (2012) and Pittaway et al. (2004), the papers were categorised into the following two lists as shown in Table 3:

- List A includes papers with a focus on knowledge management systems and SMEs
- List B includes papers with a prevalent focus on knowledge management systems but scarce or insignificant reference to SMEs or papers with a prevalent focus on SMEs but scarce or inconsiderable reference to KMSs.

The papers contained in List B (144 papers) were excluded as they were beyond the scope of the research. The 99 papers contained in List A were fully considered and subjected to the second criterion to be analysed in detail.

The second criterion is related to the focus of the paper. For this purpose, papers were read in full by two researchers. In the event of conflicting judgements, a third researcher was involved in the selection process. The in-depth reading phase allowed us to exclude 50 papers (out of 99) as they did not focus on the research topic.

The third criterion relates to the references cited in the literature analysed, but not identified during the previous process of selection or not included in Scopus and Web of Science databases. This third criterion did not disclose any further additional documents. 49 papers were thus selected for the subsequent phase of descriptive analysis.

Table 1

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<th>Material search.</th>
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<tr>
<td><strong>Keywords used</strong></td>
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<td><strong>Date range</strong></td>
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<td><strong>Number of hits retrieved in databases</strong></td>
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Table 2

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<th>Inclusion/exclusion criteria.</th>
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<td><strong>First criterion: focus of the abstracts</strong></td>
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<td><strong>Second criterion: focus of the papers</strong></td>
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<td><strong>Third criterion: cited references</strong></td>
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Table 3

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