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A TAXONOMY OF KNOWLEDGE MANAGEMENT OUTCOMES FOR SMES

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Abstract

The purpose of this paper is to systematically analyze the knowledge management research within small and medium-sized companies. The study includes a systematic review of 30 peer reviewed papers on knowledge management advantages for SMEs. Balanced scorecard perspectives cover all aspects of the organization, and, consequently, the balanced scorecard approach has been applied to classify the KM benefits. The reviewed scientific studies highlight the benefits of knowledge management in the areas of economic and social perspective (increased profits, flexibility, product reputation, financial performance), commercial and customers perspective (market share, sales growth, customer satisfaction, good external relationship), internal business processes perspective (operational performance, increased productivity, product/service quality, process improvement) and organizational learning and growth perspective (employee development, innovation, organizational creativity, learning). For future studies, determining stakeholder views is recommended in order to gain sustainable competitive advantage.

Keywords: Knowledge management, SME, knowledge management outcomes, Balanced Scorecard

1 INTRODUCTION

One of the benefits of knowledge management is to help organizations to enhance and expand the innovation process to keep their competitive advantage. Knowledge management is well known as a significant strategy for sustaining competitive advantage and improving performance. Some researchers show a positive relationship between KM and organizational performance (Andreeva and Kianto, 2012).

Chang and Chuang (2011) examined empirically the effective KM processes from the roles of infrastructure capability and business strategy on firm performance. The results confirmed the impact of KM processes on firm performance. Mills and Smith (2011) studied the impact of knowledge management resources on organizational performance. The results showed that some knowledge resources (structure and acquisition) were directly related to organizational performance, while others (technology and culture) were not directly related to organizational performance. Most of the studies reviewed in this paper, emphasized that KM enablers and KM process improve innovation and organizational performance.

Accordingly, this study analyzes the previous studies and extracts knowledge management advantages from more than 30 empirical studies. Then, KM outcomes are categorized based on the balanced scorecard approach. The balanced scorecard perspective covers all aspects of the organization. Categorizing KM benefits under the balanced scorecard perspective allows managers to be more familiar with the different aspects of KM and KM effects on different sections of the organization and also helps them to define KPIs to measure the KM performance. Particularly in SMEs, with their short stock of resources, there is a need for improved understanding as this would help them to better control and allocate their resources regarding different business operations.

The remainder of this paper is organized as follows. In the rest of section one, some important definitions are described, such as KMA, KM enablers and firm performance. Section 2 describes the research methodology, while Section 3 discusses the results. Finally, we conclude with a summary of this work.

1.1 Knowledge Management Activities

Knowledge management (KM) is a strategy for transferring the right knowledge to the right person at the right time (Ho, 2009). Beesley and Cooper (2008) defined knowledge management activities as all the activities in the organization required to move from information to innovation, the results of KM activities lead to innovation and increased competitiveness. Wiig (1993) defined it as “a group of clearly defined process or methods used to search important knowledge among different knowledge management operations”.

In general terms, all the activities that improve the value of knowledge assets are included in the content of KM. From the literature review, we can conclude that KM is a kind of dynamic circulation process. Chang Lee *et al.* (2005) noted that knowledge process consists of five components: knowledge creation, accumulation, sharing, utilization, and internalization.

1.2 KM Enablers

KM enablers indicate the organization's infrastructure to improve the efficiency of KM. The four variables – structure, technology, culture and human resource – are a sample of KM enablers for firms (Liao *et al.*, 2010). Therefore, enablers that are focused on building an infrastructure that supports KM are called KM enablers. In order to ensure the success of KM implementation, controlling KM enablers is important. In the initial planning stage, using the available limited resources in a firm efficiently, such as human resources, material resources, technology and time, leads to successful KM. Therefore, enablers are mechanisms to activate KM, break the obstacles of KM, and persuade staff to share knowledge and experience.

Ho (2009) noted that KM enablers are critical factors that put KM concepts into practice in order to achieve KM effectiveness. KM enablers and KM processes are necessary preconditions for effective knowledge management (Alavi and Leidner, 2001).

Migdadi (2009) mentioned 11 KM enablers that are appropriate for SMEs (leadership and support, culture, IT, strategy and purpose, measurement, organizational infrastructure, processes and activities, motivational aids, resources, training and education and human resource management (HRM))

Knowledge management capabilities can be categorized into two broad types – knowledge infrastructure capability and knowledge process capability. Some researchers noted that knowledge infrastructure capability is KM enablers that prepare the environment for the KM process, technology, organizational culture and organizational structure as key components of a firm's knowledge infrastructure capability (Mills and Smith, 2011).

Gold *et al.* (2001) suggested that knowledge process capabilities are needed for leveraging the infrastructure capability. Knowledge process capabilities has four dimensions: “acquiring knowledge, converting it into useful form, applying or using it, and protecting it” (Mills and Smith, 2011)

1.3 Organizational Performance

Generally, to measure organizational performance, two important indicators have been used :non-financial indicators and financial indicators. Financial indicators constitute the greatest fundamental measurement method of organizational performance. The popular dimensions of organizational performance are profit ratio, revenue growth rate, investment output ratio, and capital return ratio (Ho, 2009; Liao *et al.*, 2010).

Organizational performance is divided into three groups, efficiency, effectiveness and adaptation. First, the rate of market share and rate of sales growth shows efficiency in product development or service. Next, the ratio of output to input resource is called effectiveness, such as the rate of investment to performance. Finally, sales number or sales rate indicates adaptation, which is defined as responsive ability, such as when firms face environmental threats or opportunities (Chang and Chuang, 2011).

Non-financial indicators, such as KM, customer satisfaction are an important topic for enterprises, and the performance evaluation system should be modified accordingly. A system that only focuses on the financial dimension is obviously unable to reflect organizational operation and resource utilization sufficiently, especially in knowledge-centered organizations (Zaied *et al.*, 2012).

Researchers mentioned different dimensions for organizational performance. Zaied *et al.* (2012) argued that organizational performance has 11 dimensions (market share, profitability and growth rate, innovativeness, customer satisfaction, sales growth, efficiency and effectiveness, return on investment, productivity, competitiveness, cost performance), however some other researchers only focus on organizational performance and did not mention any dimension to measure the performance (Chang and Chuang, 2011; Kamhawi, 2010). Most of the studies reviewed in this paper highlighted that successful KM in the organization improves firm performance. Therefore, it is clear that performance improvement with all its dimensions is the main KM outcome. Figure 1 shows the structure of KM outcomes, KM process and KM enablers in the organization.

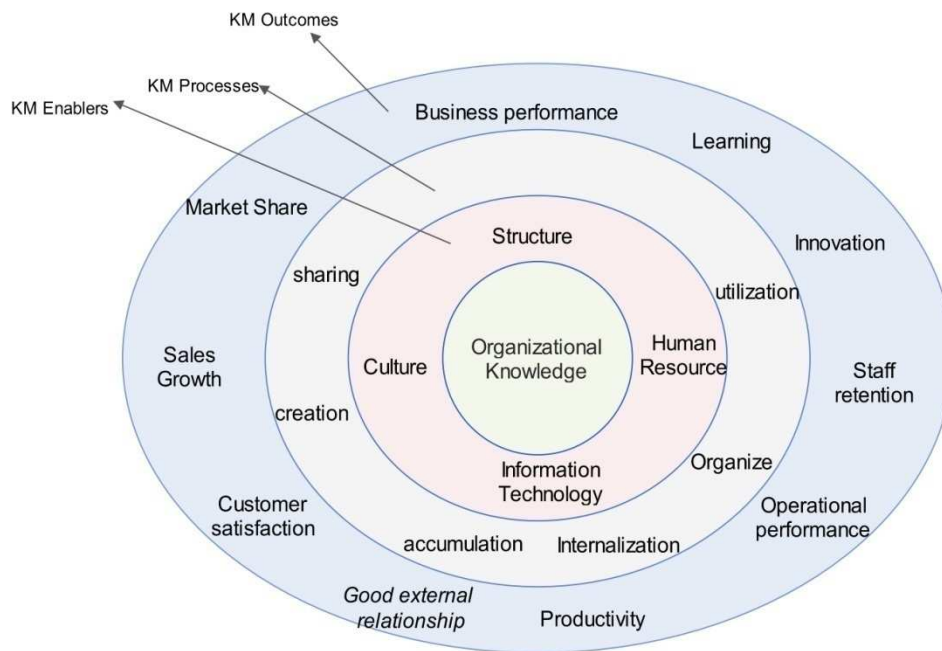


Figure1: KM outcomes, KM process and KM enablers in the organization

2 METHODOLOGY

This paper uses the systematic literature review (SLR) approach proposed by Kitchenham and Charters (2007). In the first step, the research questions are identified and then, in the next step, a research strategy is developed to achieve the objectives of the study. This step includes selection of the search terms and identifying the relevant literature. In the third step, the research selection criteria are identified to find relevant studies that adequately address the research questions. The last steps are data extraction and data synthesis. In the data extraction step, all selection papers are reviewed. In this step, we use Microsoft OneNote to classify papers and enter the data of extraction forms. Based on the research questions that each paper has addressed, together with the types of data, methodologies for synthesizing are proposed (Wen *et al.*, 2011).

2.1 Research Questions

The goal of this SLR is to summarize and classify the relevant papers relating to KM advantages and outcomes within SMEs. To achieve this goal three research questions are proposed.

1. RQ1: What are the benefits of KM in SMEs according to previous studies?
2. RQ2: What are the main results of the selected studies?
3. RQ3: According to the balanced scorecard perspective, do the benefits of KM cover all the organizational perspectives?

2.2 Search Strategy

In the research strategy, the first search term is identified, literature resources are then selected, and, finally, the search process is designed.

The following stages are utilized to formulate the search terms (Wen *et al.*, 2011):

- (a) Extract important terms from the research questions;
- (b) Find synonyms and alternative spellings for important terms;
- (c) Test the keywords in related books or papers; and

(d) Utilize the Boolean OR and the Boolean AND to create search strings.

The results are as follows:

(KM and benefits) or (Knowledge and management and benefits) or (KM and outcomes) and (SME) or (KM and Advantages and SME) or (KM and outcome and SME)

Inclusion criteria:

- Focus on the benefit of KM within SME;
- Empirical research papers;
- Mention important factors for integration;
- For a study that has both a conference version and a journal version, only the journal version will be included; and
- For duplicate publications of the same study, only the most complete and up to date one will be included.

Exclusion criteria:

- Papers that only offer the model or solution without providing any qualitative or quantitative evidence will be excluded; and
- Review papers will be excluded.

Figure 2 shows the number of papers selected from different databases after using the above criteria to make sure that they in fact fell within our scope of interest. Thirty papers fulfilled the established criteria and were thus selected for our analysis.

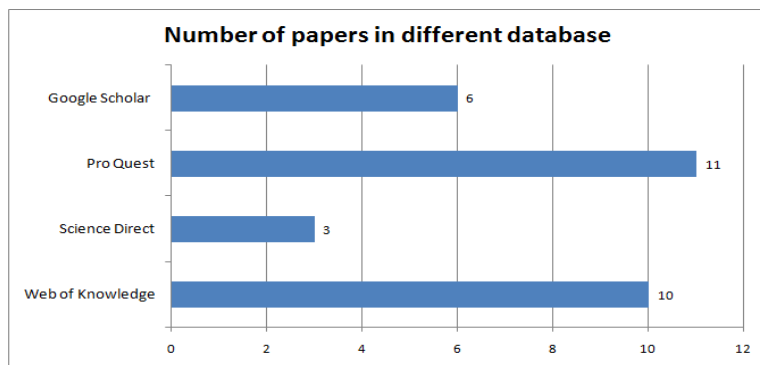


Figure 2: Number of papers in different databases

The period of the papers was restricted to the period from 1 January 2001 to November 2012. Figure 3 shows the number of papers selected per year.

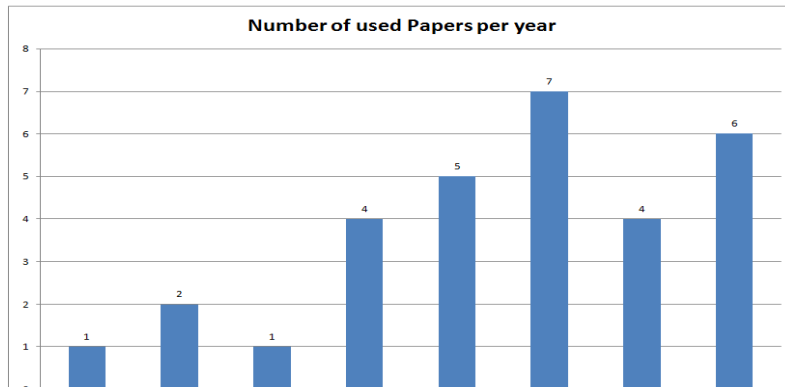


Figure 3: Number of papers selected per year

3 RESULTS AND DISCUSSION

In this study, more than 30 articles from 2006 until 2013 are systematically reviewed and the KM outcomes extracted. Then, the KM outcomes are categorized based on the balanced scorecard approach. Balanced scorecard perspectives cover all aspects of the organization (Kaplan and Norton, 1996). Categorizing KM benefits under the balanced scorecard perspectives allows managers to be more familiar with the different aspects of KM and its effects on different sections of the organization. It also helps them to define a comprehensive KPI system to measure the KM performance for all aspects of the organization.

The main purpose of the balanced scorecard model is to put the company's vision and strategy into action. It puts the strategy and vision, not control, at the center. It establishes goals, but assumes that people will adopt whatever behavior and take whatever actions are necessary to arrive at these goals (Kaplan and Norton, 1996). This is done by transforming the vision and the strategy into critical success factors within four different perspectives, a financial perspective, a customer perspective, an internal perspective, and a learning and growth perspective. The financial measures define the long-run objectives of the business unit (Kaplan and Norton, 1996). These objectives are established in the strategy and linked to sequences of action that should be taken within the four different perspectives in order to achieve the desired long-term outcome.

Cabrita *et al.* (2010) noted that KM clearly fits within the learning and growth aspect of this framework. In addition, the KM outcomes improve the internal business processes as well as impact on other processes that have an important effect on customers, and, ultimately, on the financial results. Learning and growth perspective is the key to strategic success and further the foundation for the future. Learning and growth is fostered by KM activities and initiatives (Cabrita *et al.*, 2010). Wegmann (2007) noted that in Northern Europe, some specific Balanced Scorecards have been designed in the framework of knowledge management. He shows that the French managers believe that the balanced scorecard is a relevant management instrument to drive the firm's objectives (Wegmann, 2007).

Table 1 shows the KM outcomes that are categorized based on the balanced scorecard approach. This approach can help managers develop KPIs to measure KM outcomes according to the BSC perspectives. This approach possible in viewing the role of KM in organizational strategy via a balanced scorecard would be to use a resource management based approach, focusing on intellectual capital resources combined with business processes of the organization (Fairchild, 2002).

1-Economic & Social Perspective	
Increased profits	Edvardsson and Oskarsson (2011), Edvardsson (2009),Zaied (2012),Theriou <i>et al.</i> (2010),
Flexibility	Wei <i>et al.</i> (2011)
Fewer losses	Capó-Vicedo <i>et al.</i> (2011)
Better decision-making	Edvardsson and Oskarsson (2011), Wei <i>et al.</i> (2011), Anantatmula and Kanungo (2006),Edvardsson (2009),
Competitive advantage	Zaied <i>et al.</i> (2012), Edvardsson and Oskarsson (2011), Capó-Vicedo <i>et al.</i> (2011), Zaied (2012),Wei <i>et al.</i> (2011)
Product reputation	Steenkamp and Kashyap (2010)
Corporate reputation	Steenkamp and Kashyap (2010)
Profitability	Zaied <i>et al.</i> (2012), Liao (2011), Liao <i>et al.</i> (2010)
Business performance	Kamhawi (2010), Zaied <i>et al.</i> (2012),Chen and Mohamed (2008),Chen and Mohamed (2007),Chang and Chuang (2011), Soon and Zainol (2011),Roxas <i>et al.</i> (2013), Al-Hakim and Hassan (2013), Emadzade <i>et al.</i> (2012),Zaim <i>et al.</i> (2007),Mills and Smith (2011),Gholami <i>et al.</i> (2013),Zaied (2012),Theriou <i>et al.</i> (2010),Birasnav (2013),Fugate <i>et al.</i> (2009)
Staff Performance	Gholami <i>et al.</i> (2013)
Reduced Cost	Edvardsson and Oskarsson (2011),Wei <i>et al.</i> (2011), Edvardsson (2009),
Organizational success	Migdadi (2009),Liao (2011)
2-Commercial & Customers Perspective	Al-Hakim and Hassan (2013)
Market Share	Zaied <i>et al.</i> (2012), Chang and Chuang (2011),Edvardsson and Oskarsson (2011), Wei <i>et al.</i> (2011),Liao (2011), Edvardsson (2009),Zaied (2012),Liao <i>et al.</i> (2010),Theriou <i>et al.</i> (2010),
Sales Growth	Zaied <i>et al.</i> (2012), Chang and Chuang (2011),Wei <i>et al.</i> (2011), Emadzade <i>et al.</i> (2012),Liao (2011), Zaied (2012),Liao <i>et al.</i> (2010)
Better customer handling	Edvardsson and Oskarsson (2011), Edvardsson (2009),
Customer loyalty and customer intimacy	Steenkamp and Kashyap (2010), Zack <i>et al.</i> (2009)
<i>Good external relationship(Communication)</i>	Migdadi (2009), Steenkamp and Kashyap (2010),Anantatmula and Kanungo (2006), Capó-Vicedo <i>et al.</i> (2011)
New business opportunity	Edvardsson and Oskarsson (2011), Edvardsson (2009),

Customer satisfaction and retention	Migdadi (2009),Steenkamp and Kashyap (2010),Zack <i>et al.</i> (2009), Gholami <i>et al.</i> (2013)
3-Internal Business Processes Perspective	Al-Hakim and Hassan (2013),
Improved efficiency	Capó-Vicedo <i>et al.</i> (2011), Zack <i>et al.</i> (2009), Liao <i>et al.</i> (2010),Wei <i>et al.</i> (2011)
Increased productivity	Edvardsson and Oskarsson (2011), Anantatmula and Kanungo (2006)
Faster response to key business processes	Edvardsson (2009),
Improve Product quality	Wei <i>et al.</i> (2011), Anantatmula and Kanungo (2006), Zack <i>et al.</i> (2009), Liao <i>et al.</i> (2010),
Productivity	Zaied <i>et al.</i> (2012), Wei <i>et al.</i> (2011), Edvardsson (2009),Gholami <i>et al.</i> (2013),Zaied (2012),Alegre <i>et al.</i> (2013)
Process improvement	Steenkamp and Kashyap (2010),
Operational performance	Chung <i>et al.</i> (2013), Kamhawi (2010),Al-Hakim and Hassan (2013),Emadzade <i>et al.</i> (2012),Zaim <i>et al.</i> (2007),Zack <i>et al.</i> (2009), Mills and Smith (2011),Alegre <i>et al.</i> (2013), Fugate <i>et al.</i> (2009)
4-Organizational Learning and growth	Al-Hakim and Hassan (2013),
Staff retention	Edvardsson and Oskarsson (2011), Wei <i>et al.</i> (2011),Edvardsson (2009),
Employee job satisfaction	Steenkamp and Kashyap (2010),
Employee development	Migdadi (2009)
Improved employee skills	Edvardsson and Oskarsson (2011), Anantatmula and Kanungo (2006), Edvardsson (2009),
Improved New production development	Edvardsson and Oskarsson (2011), Edvardsson (2009),Guzmán <i>et al.</i> (2012), Wei <i>et al.</i> (2011)
Innovation	Kamhawi (2010), Zaied <i>et al.</i> (2012),Wei <i>et al.</i> (2011),Capó-Vicedo <i>et al.</i> (2011),Roxas <i>et al.</i> (2013), Al-Hakim and Hassan (2013),Liao (2011), Zack <i>et al.</i> (2009),Guzmán <i>et al.</i> (2012),Gholami <i>et al.</i> (2013),Zaied (2012),Alegre <i>et al.</i> (2013), Birasnav (2013),Liao and Wu (2010)
Organizational creativity	Soon and Zainol (2011), Guzmán <i>et al.</i> (2012)
New ways of working	Edvardsson and Oskarsson (2011), Edvardsson (2009),
Learning	Wei <i>et al.</i> (2011), Steenkamp and Kashyap (2010),Liao and Wu (2010), Soon and Zainol (2011)
Sharing Best practices	Anantatmula and Kanungo (2006)
Systematic knowledge activities	Migdadi (2009)

Work relationships	Gholami <i>et al.</i> (2013)
5-Strategy	Kamhawi (2010),Zaim <i>et al.</i> (2007), Liao (2011)

Table 1: Categorizing studies based on the balanced scorecard approach.

According to table 1 the result shows that innovation and Business performance are more iterative KM outcome factors in the literature. Most of researchers in this field used these two factors for measuring KM outcomes and representative of KM outcomes. Also for each organizational perspective we recommended more iterative KM outcomes. (See table 2).

Organizational perspective	More iterative KM outcome factors
1-Economic & Social Perspective	Business performance
2-Commercial & Customers Perspective	Market Share, Sales Growth
3-Internal Business Processes Perspective	Productivity, Operational performance
4-Organizational Learning and growth	Innovation, Learning

Table 2: More iterative KM outcomes in the literature

4 CONCLUSION

The reviewed papers emphasize the outcomes of KM from four perspectives (financial, customer, internal process, learning and growth). From the balanced scorecard approach, if KM activities and KM enablers, are in line with firm strategy, it can improve firm performance and lead to better management of the firm (Liao, 2011; Migdadi, 2009). This review can help the managers of organizations and KM researchers to ensure that important KM outcomes, factors and issues are covered when they are planning and developing KM.

The study findings shed light on the following points:

- 1- Innovation and Business performance are more iterative KM outcome factors in the literature that can use for measuring KM outcomes.
- 2- KM capability can improve the external relationship with stakeholders, especially for a better understanding of the needs and expectations of customers and employees (Capó-Vicedo *et al.*, 2011; Edvardsson, 2009; Edvardsson and Oskarsson, 2011; Steenkamp and Kashyap, 2010; Wei *et al.*, 2011).
- 3- KM capability improves productivity, which can lead to competitive advantage (Gholami *et al.*, 2013; Wei *et al.*, 2011; Zaied, 2012; Zaied *et al.*, 2012).
- 4- Organizational learning and growth perspectives are a natural fit to the KM capability, which can improve employee skills and organizational learning, and lead to creativity and innovation (Al-Hakim and Hassan, 2013; Alegre *et al.*, 2013; Birasnav, 2013; Edvardsson and Oskarsson, 2011; Guzmán *et al.*, 2012; Roxas *et al.*, 2013).

Existing empirical studies have some limitations in that they only use either one or limited countries for their studies. Thus, the findings of this study may not be applicable due to a differing social context. The size of the sample of some studies is limited, and, hence, care should be taken when generalizing the findings of these studies. Although the knowledge management advantages extracted in this study are based on extant research findings, due to the rapid change in the business environment, these knowledge management outcomes may change over time. According to the stakeholder theory proposed by Freeman *et al.* (2004), to achieve sustainable competitive advantage,

the firm needs to have a stakeholder approach. The stakeholder view of strategy integrates both a resource-based view (RBV) and a market-based view (MBV). Therefore, to achieve KM success; the participation of all stakeholders in the enterprise is required. However, as in most of the studies reviewed, the respondents of the survey are only firm managers or owners, it is suggested that future studies assess the views of employees and customers. The process of knowledge creation and knowledge translation to competitive advantages also needs more research. Also, examination of the relationship among KM capabilities and innovation, customer and supplier relationships and competitive advantage need more research (Edvardsson and Oskarsson, 2011; Mills and Smith, 2011; Wei *et al.*, 2011). Future research is needed to explore whether knowledge management can create a sustainable competitive advantage within the framework of the resource-based view (RBV). As KM is a very complex area, future research should involve case studies and interviews, as well as surveys (Alegre *et al.*, 2013; Chen and Mohamed, 2007, 2008; Edvardsson, 2009; Migdadi, 2009; Wei *et al.*, 2011).

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