Knowledge management in sustainable supply chain management: Improving performance through an interpretive structural modelling approach

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ABSTRACT

Sustainable supply chain management is one vital element in achieving competitive advantage in business management and knowledge management is seen to be one key enabler. However, in previous studies the interrelationships between knowledge management and sustainable supply chain management are still under-explored. This study proposes a set of measures and interpretive structural modelling methods to identify the driving and dependence powers in sustainable supply chain management within the context of knowledge management, so as to improve the performance of firms from the textile industry in Vietnam. The research result indicated that learning organisation, information/knowledge sharing, joint knowledge creation, information technology and knowledge storage are amongst the highest driving and dependence powers. These attributes are deemed to be most-effective to enhance the performance of firms. To further enhance the value of this research, theoretical and managerial implications are also discussed in this study.

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1. Introduction

Sustainable supply chain management (SSCM) is playing an important role in business management (Seuring and Müller, 2008). Since business environment is dynamic and volatile, it creates the necessity for firms to enhance their profitability and sustainability to achieve their competitive advantage (Zailani et al., 2012). Not an exception, textile industry is one of the largest industries and is adopting sustainable management concepts in their supply chain. Therefore, this study focuses on the Vietnam textile industry which is a rapid growing industry in the country producing a vast variety of garments to meet customer needs and is experiencing increasing environmental concerns. Textile firms need to focus on sustainability concerns in their supply chain due to the pressure of achieving stakeholders’ goals. Hence, there is an increasing expectation to expand the sustainability efforts beyond their in-house operations to suppliers and customers in the supply chains (Porter and Kramer, 2006).

In the literature, a number of SSCM frameworks have been proposed (Govindan et al., 2013; Tseng et al., 2015). The recent studies have identified the influential attributes to address and evaluate the SSCM on firm’s performance (Zailani et al., 2012). The triple bottom line (TBL), which incorporates social, environment and economic aspects, has been popular and widely adopted to approach sustainability (Ahi and Searcy, 2013; Tseng et al., 2015). These were stated as three crucial performance aspects for measuring sustainability (Seuring and Müller, 2008; Zailani et al., 2012). In addition, it is evident that SSCM requires rethinking in relation to TBL deploying intangible resources, such as knowledge to improve firm’s performance (Dyllick and Hockerts, 2002). Thus, managing knowledge is deemed to be critical to achieve sustainable competitive edge in supply chain management. Knowledge management (KM) transforms information, data and intellectual assets to firms’ perdurable value through recognising useful knowledge for running and managing operations. Hence, KM in SSCM is considered as a fit strategy to achieve competitiveness and sustainability. However, there is still a gap to address, which very few studies have dealt with, in relation to the interrelationships amongst the attributes (Samuel et al., 2011). Therefore, the core aim of this study is to identify the key and
driving attributes of KM in SSCM.

This study adopted interpretive structural modelling (ISM) to define the hierarchical interrelationships amongst the attributes, which has been widely proven as a promising qualitative tool to determine the structure of any social or technical system with related identifiable attributes. The proposed methodology takes in the interrelationships amongst the attributes to identify the driving and dependence powers in supply chain management and analyse on the basis of the degree of influence they have on one another. Hence, the research questions to address are as follows:

- What are the interrelationships among the attributes?
- What are the driving and dependence powers to improve the firms’ performance through KM in SSCM?
- What is the SSCM action plan for next frontier?

Furthermore, this study also contributes to the literature of KM in SSCM by providing theoretical insights through identifying a structured set of attributes and providing comprehensive empirical findings in textile industry. The remaining of this paper is organised as follows. Section 2 analyses the relevant literature and discusses the proposed methodology and evaluation measures. Section 3 describes the methodology used in this study and the research findings will be presented in Section 4. Section 5 discusses the theoretical and managerial implications. Finally, a conclusion of this study will be provided in Section 6.

2. Literature review

This section included KM related to SSCM, SSCM and proposed methodology. A set of measures is also discussed.

2.1. Knowledge management

Prior studies have discussed the contribution of KM within supply chain field. Samuel et al. (2011) has demonstrated that this study stream has rapidly developed over the past few years and is still being investigated by the practitioners and academicians. Spekman et al. (2002) has argued that effective supply chain management requires effective KM to achieve competitive advantage, especially when extending from an individual firm to embrace the supply chain network. However, despite the notion of knowledge being relatively straight forward to understand, complication and confusion could be raised when it is applied across a wide range of disciplines. Duohon (1998) defined KM as an integrated approach to identify, capture, evaluate, retrieve, and share all information, and this information could be in the forms of database, document, policy, procedure, and formerly uncaptured expertise and experience in individual workers. It was also seen as a process of creating, acquiring and transferring knowledge that is reflected in the behaviour of the organisation (Bueno et al., 2010). Furthermore, Bloodgood (2009) referred KM as the creation, storage and utilisation of routines. Therefore, it brings concern to the creation, storage, dissemination, and application of organisational knowledge within the supply chain.

It has been noted that sustaining competitive advantage shall not merely be based on just the accumulation of knowledge (Sambasivan et al., 2009). The capability of KM in industry is utmost important when attempting to implement sustainable practices in the supply chain. KM is argued as an indispensable ingredient for the development of dynamic core competencies and, more generally, as a determinant attribute for firms with global ambitions (King and Zeithalm, 2003). Moreover, KM in SSCM is a practical strategy of delivering knowledge to the right people at the right time and is providing a platform whereby people share and transform information into actions to achieve organisational competitiveness (Lindblom and Tikkanen, 2010). Hence, the development of a sustainable supply chain depends on knowledge transfer and the capabilities amongst supply chain partners. Furthermore, it is also seen as a facilitation of application and development in organisational knowledge to create new value and enhancing SSCM. Consequently, practising KM in SSCM ensures that the most reliable, accurate knowledge is utilised efficiently, leading the best products and services being offered (Sambasivan et al., 2009).

Through this, the experience and knowledge of best practices can be efficiently stored and in good use throughout the supply chain operations. KM drives supply chain development and is likely to be applied to introduce innovation in SSCM. Furthermore, the flow of knowledge between groups with diverse purposes and practices is difficult to manage either within an organisation or between partners within the same supply chain (Samuel et al., 2011). As a result, the ability to create, combine, configure and share knowledge as fast and much as possible with as many groups/ partners as possible has become the sustainable competitive positioning in the global market (Sambasivan et al., 2009). However, to achieve SSCM, any firm must possess and share knowledge of many different attributes of their supply chains, and the lack of knowledge amongst the supply chain partners can affect the overall supply chain performance. Hence, KM is a critical component to achieve SSCM.

2.2. Sustainable supply chain management

Dyllick and Hockerts (2002) presented SSCM as an integration of sustainable development and supply chain management, whereas Seuring and Müller (2008) defined SSCM as the management of material, information and capital flows, and co-operation between firms in the supply chain while taking into account of the goals from sustainable development derived from the relevant parties’ requirements. Carter and Rogers (2008) proposed this issue as the strategic, transparent integration and achievement of an organisation’s goals through the system of cooperated business operations to improve the economic, environment and social performance of the individual firm and their supply chain. Firms that approach SSCM also place an important focus on decisions marking as an orientation to succeed for managing their supply chain. A sustainable supply network defines the way supply chain partners interact on permanent level which is used to construct long-term relationships to help to develop and select qualified partners (Pagell and Wu, 2009).

Moreover, by engaging stakeholders, firms are able to address potential pressure and obtain advantages from stakeholder knowledge (Pagell and Wu, 2009). However, multiple attributes of SSCM still need multi-functional operations to achieve competitive advantage in intensive competitions as well as to address challenges to present various attributes to facilitate the attainment of competitive changes (Su et al., 2015). SSCM is practised by applying critical success attributes which are crucial for achieving high performance for any strategy implementation and individual project success. Zallani et al. (2012) indicated that SSCM is a promising factor in relation to the sustainable performance of supply chain, particularly from the perspectives of economics and social, while Murphy and Poist (2002) posited the standalone activities within social issue and noted the need to “seek socially beneficial results along with economically beneficial ones”. Carter and Rogers (2008) proved that, at the horizontal supplier-supplier relationships level, desirable supplier groups can only be formed if there exists a channel for horizontal collaboration on sustainability to compare between different suppliers’ level of performance. This
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