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Implications for optimisation of the automotive supply chain through knowledge management

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Abstract

During the past two decades, the trend towards globalisation and the continual downward pressure on operating costs to remain competitive has prompted numerous manufacturers to adopt a radical approach to analyse and realign their cost base. Nowhere has this trend has been more prominent than in the automotive industry whereby several manufacturers have switched production to countries with a lower cost base to benefit from FDI incentives from an enlarged EU. Although savings can quickly be realised on an operational level by switching production, more critical to the overall success is the adoption of a holistic approach which encompasses the entire automotive supply chain and considers the integrated and complex nature of the production process. The aim of this paper is to assess the case study of the Slovak automotive sector from a knowledge management perspective. The purpose is to identify the importance of implementing a robust knowledge sharing process as a means of identifying and integrating key component suppliers. Moreover the process will underline the crucial role of knowledge management as a core component for the success of Just-in-Time production and as a key driver to enable an organisation to fully capitalise upon all elements of the value chain.

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Keywords: Knowledge Management; Supply Chain Management; Just-in-Time; Value Chain; Automotive industry

1. Introduction

The rapid trend towards globalisation during the past 20 years has led to numerous industrial enterprises seeking alternative strategies to remain competitive in an increasingly global marketplace. The overarching need to gain competitive advantage has led to a huge growth of interest in the area of "Knowledge Management" (KM) as firms strive to lever value from intangible knowledge assets as a means of remaining competitive [1]. The need to exploit knowledge as a driver of value is particularly significant in the context of the automotive industry within the Slovak Republic as Peugeot-Citroen, VW and Kia have relocated in recent years to capitalise on lower production costs and foreign investment subsidies since the country's ascension to the European Union in 2004 [2]. Despite potential cost-savings as a result of shifting production to a lower cost location, the possible added-value savings are dependent upon the effective sharing of knowledge to ensure the automotive supply chain is fully integrated and optimised in the new location.

In order to gaining a deeper understanding of the role of knowledge management within the supply chain the paper will assess a case study of the Slovak automotive industry. By doing so, the author will draw upon existing academic literature and theory from the disciplines of Just-in-Time, Knowledge Management and the Value-Chain. This will be achieved through the application of a value-adding approach building upon the notions of Porter's Value-Chain [3], Treacy and Wiesema's Value-discipline Model [4] and Just-in-Time Knowledge Management (JIT-KM) [5]. To date several academics have developed the notion of JIT-KM in the context of the supply chain, highlighted in the study by Kearney [6] which states that the procurement of components serves as a suitable platform to develop a company value proposition.

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The research findings presented in this paper are valuable due to the unique application of the value chain approach in a supply context. In contrast to the existing KM literature to date, which has predominately focused upon the application of knowledge within selected logistics and service based sectors [7], [8], no study has aimed to explicitly highlight the value of knowledge within a holistic and complex supply chain such as the automotive sector. Moreover, no research has explored how the application of a knowledge sharing system can unite and optimise the process on a regional level.

Furthermore, the paper has a practical purpose as the objective is to analyse and present the findings from the EU SEE (South East Europe) project "Automotive Cluster West Slovakia with a seat in Trnava" (AUTOCLUSTERS) which was established as an innovative knowledge management system with the aim of sharing best practice between stakeholders and optimising the regional supply chain for automotive manufacturers in the Slovak Republic. As a result the paper will present recommendations for further optimisation of the automotive supply chain.

2. Knowledge and supply chain value creation

The emphasis upon Knowledge Management (KM) as a modern day source of competitive advantage has led to a large number of academics studying the concept. In order to assess the role of KM within the context of supply chain management, it is firstly necessary to clearly define the concept. Despite the notion of knowledge being relatively straightforward to understand, broad usage across a wide range of disciplines has led to confusion. King [9] uses the terms "Knowledge" and "Information" and "Data" interchangeably to emphasis the role of IT and systems in KM. Similarly, Davenport et al [10] defines KM as a process of "collection, distribution and efficient use of knowledge resources", whereas Bloodgood [11] simply refers to KM as the creation, storage and utilisation of routines.

The role of KM is explained succinctly by Guo [12] in Fig. 1, where KM is depicted as a four stage process, beginning with the simple collection and storage of information, however at the most advanced level progressing to the application of knowledge through cooperation, communication, sharing and innovation. The process therefore clearly illustrates the value-adding potential when KM techniques are utilised effectively.

This argument is further supported by the study from Kearney [6] who researched the context of procurement and indicated that the collection and application of knowledge is regarded as a core competency of an organisation and a unique value-adding activity with the objective of building strong supplier relationships.

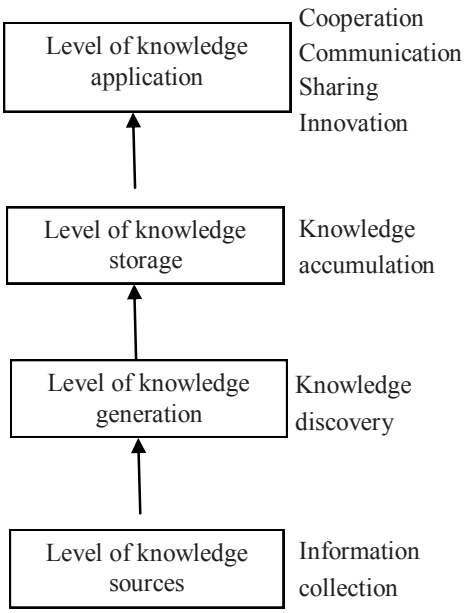

Fig 1. Knowledge Management Hierarchy, Guo, (cited in Dumke) [12]

In contrast other academics have taken a broader strategic approach to define KM as a process to ensure that knowledge reaches the correct people at the correct time and is subsequently used to improve the functioning of the business [13].

Although many of the descriptions vary in meaning and scope there appears to be clear consensus that knowledge is a valuable and even the most powerful asset of a company [1] and furthermore, it is of clear strategic importance as an added value activity in order to increase the organisations global competitiveness [1]. The establishment of a set of KM processes is a key factor to generating value [14]. The notion of value creation is of particular importance in the context of the automotive supply chain due to the reliance and need for close cooperation with a large base of component suppliers.

The process of value creation in the context of the supply chain management is illustrated by Collins [15] shown in Fig. 2. The model illustrates that explicit links can be drawn between KM and the overall performance of the firm. The usage of KM is depicted as a systematic process whereby knowledge-based resources are utilised by a combination of the KM capabilities of the firm and supply chain technologies, thus enabling the improvement in supply chain performance. The model suggests that the objective should be to harness the use of knowledge and supply chain technology to develop a potential competitive advantage, subsequently, the model links the operational result to the overall strategic performance of the firm.