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Information Quality and Supply Chain Performance: The Mediating Role of Information Sharing

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Abstract

This paper outlines the critical role of information sharing in the link between information quality and Supply Chain performance. Supply chain partners coordinate their processes through information sharing, in order to facilitate supplier-customer interactions. Since proprietary and confidential information is usually communicated along the supply chain, the preservation of the quality of the exchanged information is a crucial issue. A research framework is developed in which information sharing acts as the mediator between information quality and supply chain performance. The empirical findings from a survey of 61 manufacturing firms in Greece confirmed the mediating role of information sharing. The main implication of the findings for managers is that information sharing among partners along the supply chain facilitates higher overall performance, as a result of enforced Supply Chain Management practices elevating information reliability and quality.

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Keywords : Information Quality; Information Sharing; Supply Chain Performance; Supply Chain Management

1. Introduction

Increase in global competition has forced organizations to understand that they have to better manage their supply chains in order to survive. Supply Chain Management (SCM) offers to organizations the means to link technology with people in an attempt to align the technology with the capabilities of each organization and among its trading partners enabling rabid responding to customers needs (Antoniadis & Ananikas, 2004; Serdaris et al., 2014; Shaik &

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Abdul-Kader, 2013; Marinagi & Akrivos, 2011; Sakas et al, 2014). SCM practices are activities that enable effective management of the supply chain as a whole. Li et al. (2005) identified six dimensions of SCM practices, namely strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices and postponement. A study conducted by Li et al. (2006), indicated that higher levels of SCM practices can lead to enhanced competitive advantage and improved organizational performance. Other researchers (Tan, Kannan & Handheld, 1998; Kutsikos & Sakas, 2014), suggest that supply chain practices are related to supply and materials management issues, operations, information technology and sharing, and customer service. Kim (2006) has examined the linkages among SCM practices, competition capability, the level of supply chain integration and firm performance. His research reveals that supply chain integration may be more crucial in early stages. When supply chain integration has been completed, a company can focus on SCM practice and competition capability.

Recent views of SCM include a digital dimension (Rai, Patnayakuni, & Patnayakuni 2006), which means that the integration of business processes is implemented through Information Technology (IT) on the Internet platform (Marinagi, Trivellas & Sakas, 2014). The main difference between the digitally enabled SCM and the traditional SCM is that "supply chain partners are integrated via information flows rather than ownwership" (Dong, Xu, & Zhu, 2009). Internet is being used as one of the main networking platform in the internal and external supply chain through free, open source software (Mourtzis, 2011; Nasiopoulos et al., 2011a; Nasiopoulos et al., 2011b). Therefore, information systems for SCM are now implemented using recent advances on IT (Olson, 2012; Nasiopoulos, Sakas, Vlachos, 2014), such as Internet Web services, Application Programming Interfaces (APIs), and software-as-a-service (SaaS) development platforms.

The significant role and impact of information sharing in supply chains has been extensively studied (Lee, So, & Tang, 2000; Zhao, 2002; Zhao, Xie, & Leung, 2002; Fiala, 2005; Li et al., 2005; Fawcett et al., 2007; Ajay & Maharaj, 2010; Yang & Maxwell, 2011; Khurana, Mishra, & Singh, 2011; Lotfi et al., 2013). Information sharing can be implemented using modern IT techniques to enable the coordination of processes among trading partners, facilitating supplier-customer interactions and minimizing transaction cost. Efficient and user friendly IT applications may improve information sharing (Yang & Maxwell, 2011). However, the cost and complexity of technological solutions are among the main barriers that discourage extended information sharing within supply chains (Fawcett et al., 2007). While information is gathered, disseminated, and shared throughout the supply chain using Intranets and Extranets, information quality should also be reserved. Naumann (2001) has noted the significant role of information quality in a new digital era through the axiom: "Information quality is the response time of the Web age".

In this paper, we explore the critical role of information sharing in the link between information quality and supply chain performance. We present the methodology and findings of a field research that was conducted in 2013, in 61 manufacturing firms at the region of Central Greece. A structured questionnaire was built by adapting existing scales in the Supply Chain Management literature measuring information quality, information sharing, and supply chain performance. The results confirm that the relationship between information quality and supply chain performance is mediated by information sharing.

The rest of the paper is organized as follows: Section 2 discusses the theoretical background. Section 3 presents the methodology of the field research that was conducted and the data analysis and the results that were revealed. Section 4 discusses the research results and finally, section 5 concludes the paper.

2. Theoretical Background

Information Quality (IQ) is a multidimensional concept, which has been analyzed by many researchers in an attempt to identify and classify its dimensions. Some of these dimensions include believability, interpretability, reputation, value-added, completeness, objectivity, reliability, security, timeliness, price, verifiability, accuracy, availability, latency and response time (Naumann & Rolker, 2000). The up-to-date Information Quality Guidelines provided by the United States Patent and Trademark Office (USPTO, 2014) define Quality as an "encompassing term comprising *objectivity*, *utility*, and *integrity*". *Objectivity* involves two elements: presentation, and substance. The presentation element focuses on ensuring accurate, clear, complete, and unbiased presentation of information, while the substance element focuses on ensuring accurate, reliable, and unbiased information. *Utility* refers to the