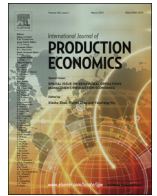




Contents lists available at ScienceDirect

Int. J. Production Economics

journal homepage: www.elsevier.com/locate/ijpe

Integration breach: Investigating the effect of internal and external information sharing and coordination on firm profit

Ryad Titah ^{a,*}, Shadi Shuraida ^{b,1}, Yacine Rekik ^c

^a HEC Montréal, 3000, chemin de la Côte-Ste-Catherine, Montréal, QC, Canada H3T 2A7

^b Baruch College, City University of New York, One Bernard Baruch Way, 55 Lexington Ave. at 24th St, New York, NY 10010, USA

^c EMLYON Business School, DISP Lab, 23, Avenue Guy de Collongue, 69130 Ecully, France

ARTICLE INFO

Article history:

Received 30 September 2014

Accepted 6 January 2016

Keywords:

Electronic information integration

Supply chain management

Internal integration

External integration

Dynamic pricing

Inventory policy

Arm's-length relationships

ABSTRACT

The net benefit effects of information integration on organizational performance have rarely been challenged in the literature. While some empirical studies have provided support for the positive effects of information integration, very few have suggested that firms may be “worse off” as a result of it. In line with the latter view, this study considers that information integration could have either *positive* or *negative* impacts depending on the congruence or lack thereof of the objectives between the entities involved in information integration. To investigate this view, this study examines the effect of different types of information integrations on firm performance under supply and demand uncertainty. We consider a supply chain composed of two stages where a supplier provides a retailer with a single product under a periodic review multi-period framework. Internal Information Integration is reflected in joint dynamic pricing and ordering strategies by the retailer's logistics and marketing units, with the objective of maximizing the expected profit under a customer service level target. External Information Integration is reflected in the supplier sharing his supply variation with the retailer, and in the retailer sharing his customer level target with the supplier. The study's findings show that Full integration (i.e., centralized decision making) results in optimal firm profitability, inventory policy and customer service level when both the supplier and the retailer have shared objectives. In contrast, when the supplier and the retailer focus on maximizing their own performance, an “Arm's length relationship”-i.e., No integration-becomes a better alternative than Full integration, thus indicating that high integration levels are not always beneficial to the firm.

© 2016 Elsevier B.V. All rights reserved.

1. Introduction

Considerable research has argued that the value of information technology (IT) on firm performance is the result of electronically integrating various functions through the timely and accurate flow of information that is necessary to support the various business processes and activities (Barki and Pinsonneault, 2005; Devaraj et al., 2007; Grover and Saeed, 2007; Markus and Tanis, 2000). This view is based on the assumption that information integration facilitates the coordination of interdependent activities performed by different groups or individuals (Barki and Pinsonneault, 2005; Malone and Crowston, 1994). Some firms have also shared this view, and have increasingly employed intra and inter-organizational systems (IOS) to coordinate their internal functions and also coordinate with their

customers and suppliers (Barua et al., 2004; Devaraj et al., 2007; Straub et al., 2004; Subramani, 2004).

While some empirical studies have provided support for the positive effects of information integration (e.g. Ranganathan and Brown, 2006; Seddon et al., 2010; Xu et al., 2014; Zhang and Chen, 2013), research investigating their impact has not provided a clear conclusion to their value on firm performance (Devaraj and Kohli, 2003; Devaraj et al., 2007; Grover and Saeed, 2007; Mukhopadhyay and Kekre, 2002; Narasimhan and Kim, 2001; Wong et al., 2011). Indeed, the widespread use of IOS in industry is not merely the result of their expected net benefits. A review of the literature investigating IOS adoption (see Table 1) suggests that although organizations adopt IOS for their expected benefits (i.e., technology factors), numerous firms are often forced to adopt as a result of institutional and environmental factors that include trading partner pressure, competitive forces, and/or government legislation. As shown in Table 1 and argued by Teo et al. (2003), “there is strong empirical support for institutional-based variables as predictors of adoption intentions for interorganizational linkages” even after taking other factors into account such as organizational and technology factors

* Corresponding author. Tel.: +1 514 340 1464; fax: +1 514 340 6132.

E-mail addresses: ryad.titah@hec.ca (R. Titah),

shadi.shuraida@baruch.cuny.edu (S. Shuraida), rekik@em-lyon.com (Y. Rekik).

¹ Tel.: +1 646 312 3383; fax: +1 646 312 3351.

Table 1
A sample of the literature investigating the adoption of inter-organizational systems.

Reference	Inter-organizational systems (IOS) studied	Factors tested and found to significantly influence IOS adoption					
		Technology factors		Organizational factors		Institutional and Environmental factors	
		Tested	Significant	Tested	Significant	Tested	Significant
Iacovou et al. (1995)	EDI	✓	✓	✓	✓	✓	✓
Premkumar and Ramamurthy (1995)	EDI	✓	✓	✓	✓	✓	✓
Chwelos et al. (2001)	EDI	✓	✓	✓	✓	✓	✓
Kuan and Chau (2001)	EDI	✓	✓	✓	✓	✓	✓
Nelson and Shaw (2003)	IOS systems	✓	n.s.	✓	✓	✓	n.s.
Teo et al. (2003)	Financial EDI	✓	✓	✓	✓	✓	✓
Zhu et al. (2003)	e-business	✓	✓	✓	✓	✓	✓
Hsu et al. (2006)	e-business	✓	✓	✓	✓	✓	✓
Zhu et al. (2006)	e-business	✓	✓	✓	✓	✓	✓
Li (2008)	e-procurement	✓	✓	✓	✓	✓	✓
Lin and Lin (2008)	e-business	✓	✓	✓	✓	✓	✓
Venkatesh and Bala (2012)	IO business process standards	✓	✓	✓	✓	✓	✓

(p. 39). This view is further echoed by Oliveira and Martins (2011) who conducted a literature review and found that organizations may in fact adopt IT in order to comply with social, competitive, or regulatory pressures. It is actually well-documented that a number of corporations such as Walmart, Sears, and automobile manufacturers threatened to stop working with suppliers that do not adopt EDI (Premkumar et al., 1997).

In a similar vein, a study by Zhu et al. (2003) found that European firms operating in high e-business intensity countries were more cautious in adopting IOS, suggesting that more informed firms are less likely to aggressively adopt IOS. Some scholars have supported this view by suggesting that organizations may be “worse off” by using IOS, as the interdependent entities use the information to maximize their own objectives at the expense of others (Bian et al., 2014; Clemons and Row, 1993; Grover and Saeed, 2007; Mukhopadhyay et al., 2011). More specifically, although supply chain partners (e.g. suppliers and retailers) share the strategic objective of maintaining a profitable and viable supply chain to stay in business, they are also rationally self-interested entities that focus on optimizing their own performance (Simatupang and Sridharan, 2005, p. 350). However, limited research has examined the effects of intra and inter-organizational information integration between different parties whose objective is to maximize their own profit (Bian et al., 2014; Clemons and Row, 1993; Grover and Saeed, 2007; Mukhopadhyay et al., 2011).

Hence, given the widespread use of IOS in industry, we propose that organizational information integration could be more harmful than no integration when supply chain members focus on maximizing their own objectives (Simatupang and Sridharan, 2005, p. 355). More specifically, the present study explores the impact of inter and intra-organizational information integration on firm profit, and the possible conditions under which this integration could be detrimental to the firm. Using analytical models, we will examine the impact of integrating a retailer's inventory and pricing decisions while taking into account product replenishment information obtained from its supplier on its inventory holding cost and profit, while satisfying a target service level. The study's main conceptual contribution is that it assimilates and extends the past literature by comparing the relative benefits of four main integration scenarios – centralized and three decentralized – that describe configurations of information sharing and coordination between a firm's supplier and its logistics and marketing departments. Further, this study's results are also expected to inform practice by providing retailers with useful pricing and inventory control policies under uncertain demand and supply conditions.

2. Internal and external organizational information integration

Organizational integration is “the extent to which distinct and interdependent organizational components” such as organizational departments or supply chain partners, “constitute a unified whole” (Barki and Pinsonneault 2005). Within today's organizations, this integration is mainly enabled by information technologies that “support information exchange and coordination across business functions and partner firms” (Grover and Saeed, 2007; Wong et al., 2011). For example, despite their functional and specialization barriers, the marketing and logistics departments are interdependent in the supply of products to meet customer demand (Barki and Pinsonneault, 2005; Lee and Whang, 1999; Lee and Kim, 1993). This task interdependence between both functions increases the amount of task related uncertainty, which in turn necessitates more information sharing and processing abilities to allow for monitoring, feedback, and adjustment (Tushman and Nadler, 1978). Hence, the present study will refer to organizational integration as the exchange of information between interdependent organizational components enabled by information technologies.

One mechanism for integrating the marketing and logistics functions is through joint inventory and pricing strategies. For example, IS advancements in recent years have enabled firms to use dynamic pricing to manage inventory costs on one hand and service levels on the other with the objective of improving organizational profits (Chen and Simchi-Levi, 2004a, 2004b; Elmaghraby and Keskinocak, 2003; Gallego and Ryzin, 1994; Zhang and Chen, 2013). More specifically, the exchange of such information between both functions is likely to result in an advantageous solution for the firm for two reasons. First, the marketing department will be able to opt for optimal pricing decisions given its knowledge of the product demand and supply functions. Second, without product price and demand information the logistics department will likely base its ordering decisions on an estimated (i.e., error prone) product demand function which would in turn lead to sub-optimal inventory management practices. Hence, *internal integration between marketing and logistics is expected to be profitable to the firm.*

Similarly, previous literature has demonstrated the benefits of sharing information across the supply chain partners (i.e. external integration) on individual firm performance (Aviv, 2002; Chen, 1998; Frohlich and Westbrook, 2001; Frohlich and Westbrook, 2002; Krajewski and Wei, 2001, Lee and Tang 2000, Straub et al., 2004; Subramani, 2004; Xu et al., 2014; Zhang and Chen, 2013). These results have been substantiated in a meta-analysis conducted by Leuschner

Download English Version:

<https://daneshyari.com/en/article/5079145>

Download Persian Version:

<https://daneshyari.com/article/5079145>

[Daneshyari.com](https://daneshyari.com)