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Are logistics outsourcing partners more integrated in a more volatile environment?

Qian Yang [a], Xiande Zhao [a,b,*]

[a] Institute of Supply Chain Integration and Service Innovation, School of Business Administration, South China University of Technology, Wushan Road, Guangzhou 510640, China
[b] China-Europe International Business School (CEIBS), Hongfeng Road, Pudong, Shanghai 201206, China

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ABSTRACT

This study examines how integration, an emerging innovative approach in inter-firm relationship management, between the vendor and the client in logistics outsourcing relationships is influenced by environmental uncertainties. Building on transaction cost theory, we develop the hypothesis that integration decreases to cope with supply volatility and technology uncertainty, and increases to cope with demand volatility and legal unenforceability. These four interrelated yet distinct characteristics jointly describe environmental uncertainties in a logistics outsourcing relationship. Our analysis of 264 such relationships suggests that integration does decrease with supply volatility and technology uncertainty and increase with demand volatility and legal unenforceability. By enhancing operational performance, integration improves outsourcing performance in terms of both financial performance and overall satisfaction. Lastly, operational performance also contributes to financial performance.

1. Introduction

Companies generally outsource their logistics to external service providers in order to improve the efficiency of their core functions. How to manage their relationships with service providers is critical to the success of these outsourcing activities due to the loosely coupled nature of outsourcing relationships. Except for the widely acknowledged control mechanisms like contract, monitoring, relational norms, or personal ties, recent studies propose that, integration, an innovative approach in inter-firm collaboration, can also work as an effective mean in inter-firm relationship management that help to guarantee task fulfillment and improve the collaboration outcome (Stank et al., 2001; Flynn et al., 2010). In addition, innovative practices of information sharing, coordinated planning and process improvement through the use of internet and other information and communications technologies inherent in integration also help to reduce costs and improve speed of responses in the supply chain (Lee, 2002). Many studies have already addressed integration from several perspectives, including type and dimension (e.g., Chen et al., 2009; Flynn et al., 2010; Kannan and Tan, 2010; Swafford et al., 2008), power relationship commitment (e.g., Yeung et al., 2009; Zhao et al., 2011), IT implementation and adoption of e-business (e.g., Li et al., 2009, Nurmilaakso, 2009; Prajogo and Olhager, 2012; Thun, 2010), institutional forces and governance choices (e.g., Cai et al., 2010; Richey et al., 2010; Wong and Boon-itt, 2008), and collaborative design (e.g., Soosay et al., 2008; Trappey and Hsiao, 2008). These studies are based on economic and relational exchange theories and share a similar focus on how to increase integration through exchange attributes and collaboration arrangements either to reduce the cost of transactions induced by institutional constraints, information asymmetry and opportunistic behavior (Li et al., 2006; Flynn et al., 2010), or to create an affective attached relationship leading to repeated transactions and shared values (Chen and Paulraj, 2004; Fawcett et al., 2007).

Although the studies cited above have focused on strategies and means that encourage integration, the effect of the external environment on integration has received inadequate attention in prior research (Wong and Boon-itt, 2008). Addressing environmental influences is important because the aim of integration is to achieve maximum value for firms by reducing transaction costs through strategic collaboration with partners (Flynn et al., 2010), and transaction cost is typically a function of environmental uncertainty as predicted by transaction cost economics. As a strategic choice in inter-firm exchanges, integration is not fixed, and its strength is largely determined by a firm's anticipation of the net value (returns minus costs) it will gain through full

* Corresponding author at: Institute of Supply Chain Integration and Service Innovation, School of Business Administration, South China University of Technology, Wushan Road, Guangzhou 510640, China. Tel.: +86 20 87114103; fax: +86 20 87112682.
E-mail addresses: bmyangqian@scut.edu.cn (Q. Yang), xiande@ceibs.edu (X. Zhao).

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collaboration with partners, which is often influenced by market uncertainty (Luo, 2007).

We use logistics outsourcing relationships established by a client firm (a manufacturer or a retailer) and a vendor firm (a logistics service provider) in an emerging market to develop our theory and empirical verification. An emerging market is a good setting for the investigation of environmental uncertainty because this type of market is characterized by rapid growth, a dynamic structure and a volatile environment (Luo, 2007). Specifically, we use four distinct yet interrelated constructs to jointly describe environmental uncertainty in a logistics outsourcing relationship: *demand volatility*, *supply volatility*, *technology uncertainty and legal unenforceability* . Building on transaction cost theory, we develop the logic that integration may decrease to cope with supply volatility and technology uncertainty but increase to deal with demand volatility and legal unenforceability. Our analysis of 264 logistics outsourcing relationships in China generally supports these hypotheses.

2. Theoretical background and research hypotheses

2.1. Theoretical background

It is essential to investigate the issue of uncertainty and integration in outsourcing relationships. Unlike other forms of inter-firm collaboration, such as joint equity ventures, franchising, alliances and buyer–supplier relationships, outsourcing is regarded by firms as a powerful vehicle to reduce costs, avoid risks and improve the efficiency of core functions by allocating part of a product value-adding function to external sources (McIvor, 2009). Thus, outsourcing relationships are much more loosely coupled, mainly rely on contractual agreements, and have less or even no risk- or resource-sharing activities. Such relationships are vulnerable to external uncertainties, as fewer complementary resources are pooled to solidify collaborative competitive advantages (Khanna et al., 1998); fewer commitment and risk sharing structures are triggered (Osborn and Baughn, 1990); and fewer mechanisms are arranged for joint problem-solving and crisis management. Thus, integration is important for outsourcing relationships. In recent years, due to standardized delivery systems and the rapidly changing technologies used in logistics, professional logistics providers have been able to perform much more efficiently and at lower costs than firms can achieve in house (Logan, 2000). More and more firms are contracting out their logistics operations to outside service providers. Logistics outsourcing possesses huge market value and is increasingly viewed as a key promoter of a nation's business activities (Chen et al., 2010). Thus, investigating how partners integrate to respond to external uncertainties in logistics outsourcing setting will deliver various benefits both in theory and in practice.

“Integration” is generally defined as “the extent to which separate parties work together in a cooperative manner to arrive at mutually acceptable outcomes” (Jayaram and Tan, 2009). In a logistics outsourcing setting, we define “integration” as the degree to which a client firm and a vendor firm strategically collaborate and manage their inter-organizational processes to achieve mutually efficient and timely flows of information, services, capital and decisions, with the objective of obtaining maximum value for both sides. Within the framework of this definition, integration contains components of information sharing, coordinating, joint planning, and joint problem-solving (Flynn et al., 2010). In inter-firm exchanges, integration induces partners' specific investments of time, information, commitment, employees, and other organizational resources into their mutual relationship (Power, 2005; Flynn et al., 2010) and serves as effective relationship governance that defines partners' behaviors and coupling mechanisms, leading to the fulfillment of joint objectives (Frohlich and Westbrook, 2001; Stank et al., 2001). As illustrated by both theoretical arguments and empirical demonstrations (Liu et al., 2009; Luo et al., 2009) in terms of transaction cost theory, specific investments and relationship governance are basic tools for curbing transaction costs, and transaction costs are principally a function of uncertainty, which is determined in part by environmental factors.

Environmental uncertainty typically reflects the rate of change, the degree of instability, or the dynamism of factors in the environment (Luo, 2007). Logically, in situations of high environmental uncertainty, the process of inter-firm exchange will become much more complex, as it is hard to get complete and accurate information to assess market conditions, predict market changes, evaluate partner qualifications and capabilities, and ensure the protection of institutional systems (Krishnan et al., 2006). Each party needs to spend more time and resources on bargaining and negotiation, monitoring partners' behavior to guarantee their fulfillment of obligations, and making remedies when communication and coordination failures emerge. These requirements lead to increased costs related to bargaining, monitoring, and mal-adaption, which are the basic sources of transaction costs (Dahlstrom and Nygaard, 1999). When such costs increase beyond a party's tolerable level or exceed its expected revenue from the exchange relationship, that party will lose its passion to maintain the relationship, and will behave opportunistically or even abandon the relationship (Hill, 1990). Thus, when firms anticipate high environmental uncertainty and the consequential transaction costs, they usually tend to impose certain governance mechanisms on their exchange relationships to reduce uncertainty, constrain transaction costs, and enhance performance (Joshi and Campbell, 2003; Li et al., 2010; Poppo and Zenger, 2002; Ryu and Eyuboglu, 2007).

Environmental uncertainty is a multidimensional concept. It usually involves the variability, unverifiability, and unpredictability of various elements related to both the macro (general environment) and micro (partner or business) dimensions of the business environment (Huo et al., 2014; Luo, 2007). Based on a review of existing studies of environmental uncertainty, we use four distinct yet interrelated constructs to jointly profile environmental uncertainty in a logistics outsourcing relationship: (a) demand volatility, (b) supply volatility, (c) technology uncertainty, and (d) legal unenforceability. Following Lee's (2002) typology, demand volatility and supply volatility are indicators from the business level. They represent the rate of change of market participants within a logistics outsourcing relationship, including changes in demand type, quantity, and specific requirements on the client side and changes in price, capability, and quality on the vendor side (Mohr, 2001). Technology uncertainty and legal unenforceability are indicators related to general environment. Logistics is a technology intensive industry. Such industries tend to compete fiercely and generate competitive turbulence due to the rapidly evolving nature of technology (Hills and Sarin, 2003). In the past 30 years of economic reform and opening up, the Chinese government has been developing a new legal system to regulate its social and economic activities. Nevertheless, due to the uneven levels of development between cities or industries and the strong political ties between top executives and government officials, lawsuits enforced in a totally consistent manner and not influenced by particular circumstances still cannot be guaranteed in China (Luo, 2007; Zhou and Poppo, 2010). The perception of a lack of adequate and consistent legal protection leads firms to consider legal unenforceability to be an important issue in this market. These four dimensions (*demand volatility*, *supply volatility*, *technology uncertainty*, and *legal unenforceability*) each affect integration. Collectively, they describe environmental uncertainty in a logistics outsourcing relationship.