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Lock-in situations in supply chains: A social exchange theoretic study of sourcing arrangements in buyer–supplier relationships

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ABSTRACT

Social exchange theory is used to gain a better understanding of the relationship between a buyer and a supplier that is characterized by lock-in situations. We begin by reviewing the theoretical foundations of social exchange theory. Next, we use an illustrative multinational business example from a Danish Business Group to demonstrate the complexities of the lock-in situation. Conjectures related to lock-in behaviors are initially developed and then examined by means of a game-theoretic model. The analysis provides a basis for the development of propositions which are examined employing a behavioral experiment. The results indicate that the optimal pricing strategy of the supplier is to lower the price with increasing demand and the optimal investment intensity of the buyer decreases with increasing demand. The paper concludes by presenting directions for future research.

1. Introduction

The need to increase our theoretical understanding of the complex inter-relationships within supply chains has stimulated a great deal of research (e.g., Smith et al., 1995; Zaheer and Venkatraman, 1995; Lassar and Kerr, 1996; Carr and Pearson, 1999; Curkovic et al., 2000; Shin et al., 2000; Primo and Amundson, 2002; Rodriguez and Wilson, 2002; Griffith et al., 2006; Li et al., 2008). The emphasis on supply chain management strategies aimed at fostering the development of supply chain partnerships (i.e., an integrated effort to identify, maintain, and build a network for the mutual benefit of supply chain members and to reduce the dysfunctional aspects of exchange transactions) has as a basic tenet, that building cooperation and coordination over time increases the efficiency and effectiveness of the relationship (Choi and Hartley, 1996; Lassar and Kerr, 1996; Carr and Pearson, 1999; Curkovic et al., 2000; Shin et al., 2000; Stuart, 2000; Primo and Amundson, 2002; Li et al., 2008). Despite the growing academic and practitioner interest in the management of supply chain relationships, a review of the literature reveals several shortcomings that have limited our understanding.

First, while a number of theoretical approaches have been advanced within the literature (e.g., resource based view, transaction cost theory and agency theory), only recently have supply chain researchers begun to employ the holistic, theoretic approach of social exchange theory to the study of supply chain relationships (e.g., Griffith et al., 2006; Li et al., 2008). The lack of research employing social exchange theory within supply chain management is surprising given not only its ability to add depth of

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understanding to inter-organizational relations (e.g., Emerson, 1976), but more importantly due to the widespread use of elements of it in existing models of supply chain relationships (cf., Griffith et al., 2006). As such, one contribution of this manuscript is to advance the theoretical discourse on social exchange theory's ability to enhance our understanding of issues in supply chain management (e.g., buyer–supplier dyadic relationship under lock-in situations where lock-in is conceptualized as instances where for all intent and purposes, one party is heavily dependent upon the other party (cf., Arthur, 1989; Lonsdale, 2001)).

Second, most organizational theories applied within the context of supply chain management implicitly address time sensitive issues, where actions taken at one point in time (t) result in specific outcomes in a different time period ($t + i$). For example, researchers contend that specific managerial actions, such as the development of trust enhance later coordination within the relationship that ultimately influences performance (e.g., Rodriguez and Wilson, 2002; Johnston et al., 2004). However, while these organizational theories imply a conceptualized time continuum, most of these studies explore the issues under study by relying on the analysis of cross-sectional data (e.g., Griffith et al., 2006; Li et al., 2008), thus presenting a limited examination of the extant theory. By using a dynamic model and linking the insights obtained from the model with the precepts of social exchange theory, we are able to overcome this limitation, therefore providing a fuller examination of organizational theories applied within the context of supply chain management.

Third, although researchers have begun to explore supply chain management issues through the application of social exchange theory (e.g., Griffith et al., 2006; Li et al., 2008), researchers have favored justice policies over the issue of power. This limitation is important given "that the two most prominent research topics in social exchange theory are power and justice" (Emerson, 1976, p. 339). More importantly, as power is a fundamental issue in supply chain management, its incorporation within the broader context of social exchange theory could provide substantial insights for understanding supply chain activities such as investments in innovation and other assets, relationships and outcomes. Specifically, we believe that the examination of *lock-in* situations between a manufacturer and its supplier, i.e., instances where for all intent and purposes, one party is heavily dependent upon the other party, with few alternatives, under social exchange theory, can provide new insights into controlled self-interest behaviors (e.g., strategies) in on-going supply chain relationships.

To address these issues we make use of a multi-method approach to investigation, as promoted by recent editorial discussions (Boyer and Swink, 2008). We begin by reviewing the theoretical foundations of social exchange theory, inclusive of power, dependence and justice. Next, we use an illustrative example of a Danish Business Group to demonstrate the external validity of the theoretical issues related to lock-in dependence in a buyer–supplier dyadic relationship within a supply chain and its theoretical influence on buyer and supplier strategies under social exchange theory. We then employ an analytical model to analyze the situation of lock-in dependence within a supply chain relationship to derive the equilibrium strategies related to the buyer's investment intensity in developing a substitute product component and the supplier's pricing. A behavioral experiment is then used to examine the model developed. This is followed by a discussion of the theoretical and managerial implications of the results. We conclude the paper by offering several directions for future research.

2. Theoretical foundation

Social exchange theory (SET) argues that individuals or corporate groups interact for a reward or with the expectation of a reward from their interaction with others (Homans, 1958; Thibaut and Kelley, 1959; Emerson, 1976). The basic assumptions of SET are (1) people are rational and calculate the best possible means to engage in interaction and seek to maximize profits/returns; (2) most gratification is centered in others; (3) individuals have access to information about social, economic, and psychological dimensions that allows them to assess alternatives, more profitable situations relative to their present condition; (4) people are goal oriented; (5) building social "credit" is preferred to social "indebtedness"; and (6) SET operates within the confines of a cultural context (i.e., norms and behaviors being defined by others). As such, SET takes the perspective that behavior can be assessed by the rewards of interaction minus the cost of that interaction where a basic motivation for interaction is the seeking of rewards and avoidance of punishments (Emerson, 1976; Bandura, 1986). For example, in the context of supply chain relationships, a supplier makes a contribution to the manufacturer (i.e., the buying firm), via its supply chain management policies. In contributing to its supply chain partner an expectation forms for the return of a contribution at a later time. The manufacturer receiving a valued contribution develops a sense of obligation and reciprocates with appropriate responses. SET is composed of a collection of fundamental precepts that outline social exchange. First, the *success proposition* argues that for all actions taken, the more often a particular action is rewarded the more likely a member to an exchange will perform that action again (Homans, 1961). In the supply chain context, "gain sharing" arrangements between a buyer and a supplier are reflective of this principle. The *value proposition* argues that the more valuable to a member of an exchange is the result of the member's action, the more likely the member of the exchange is to perform the action again (Blau, 1964; Emerson, 1976). In the supply chain context, "partnering" between a buyer and a supplier reflects this principle. The *reward proposition* (also known as the deprivation-satiation proposition) argues that rewards gain value when deprived. The *aggression proposition* argues that when an exchange member's action does not receive the expected reward, or receives unexpected punishment, the exchange member will aggressively avoid the action in the future (Homans, 1961). Finally, the *rationality proposition* argues that in choosing between actions, a member to an exchange will