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Bridging structural holes in global manufacturing equity based partnerships: A network analysis of domestic vs. international joint venture formations

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ABSTRACT

Firms operating in a global environment face increasing uncertainties when designing the composition of their supply chain networks. In addition, the complexity of the structure of these networks is ever growing. Thus, when firms look to engage in global partnership formations, access to information about the network structure becomes a vital asset in mitigating the uncertainties associated with the partnership formation dynamics; particularly when bridging structural holes in the network. Accordingly, the aim of this research is to demonstrate that firms can leverage network analysis when designing their global sourcing strategies to assuage the difficulties associated with the lack of information in the JV formation process thus rendering them in a more fortuitous position. Thus, we investigate which characteristics of the firm's network structure can be used to gain structural network information associated with new JV formations; both domestic and internationally. Specifically, we examine JV network brokerage, JV network reach centrality and JV network remoteness. Our results suggest that these network characteristics play a vitally important role in bridging the structural holes associated with domestic and cross boarder JV formations.

1. Introduction

The trend towards globalization is particularly strong within modern supply chains. Global sourcing has not only become the norm, but it also has proven to be an important tool in developing effective and efficient global value chains that are built on strong supplier relations (Yeniyurt et al., 2013). Global sourcing has generated other benefits such as economies of scale and location specific cost benefits that help firms achieve a global market advantage (Yeniyurt et al., 2005). Yet, developing such global sourcing strategies poses significant challenges for the company (Camuffo et al., 2006), especially in the early stages of developing a global sourcing portfolio. Principal among these challenges are the dynamics of initiating a new equity based partnership, such as a Joint Venture (JV). Manufacturing JVs are an increasingly common organizational arrangement (Buzacott and Steve Peng, 2012) characterized by two autonomous companies forming a separate entity for a specific purpose (Kogut, 1988). In this study, the focus is the JV formation process (i.e., equity-based collaborative partnerships) created with the primary purpose of sourcing, manufacturing and distributing components. We choose manufacturing JVs because such joint ventures enable the firm to expand its manufacturing capabilities while maintaining governance over the joint operations. With the proliferation of globalization, the consideration set is now global, with a much larger and more diverse alternative manufacturing partnership opportunities spread across multiple continents.

There are significant challenges facing the firm undertaking the process of collaborative venture formation and these challenges propagate themselves principally around the lack of information and uncertainty (Mosakowski, 1997). This uncertainty is only exacerbated in a global context (Yeniyurt et al., 2009). This leads to significant complexity with respect to the coordination of production (Danese et al., 2004). The aim of this research is to demonstrate that firms can leverage network analysis (Bernardes and Zsidisin, 2008; Choi and Wu, 2009b; Dubois and Fredriksson, 2008) when designing their global sourcing strategies to assuage

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the difficulties associated with the lack of information in the JV formation process thus rendering them in a more fortuitous position. Essentially, “network theory refers to the mechanisms and processes that interact with network structures to yield certain outcomes for individuals and groups” (Borgatti and Halgin, 2011:1168). The network perspective, as a theoretical lens, views these structures as sets of interrelated and purposively connected, rather than disjoint or loosely assimilated units (Borgatti and Xun, 2009).

Thus, while extant research has examined the intersection of network structure and new JV formations (e.g. Carnovale and Yeniyurt, 2014), there has been little work that examines the connection between information access and new JV formations, as well as the differences that the structural characteristics of the network have when examining international vs. domestic JVs. Consequently, there is a gap in the literature. We postulate that firms in the process of designing their global sourcing strategies can assuage the difficulties associated with a lack of information in the initial stages of JV formations by utilizing information about the structure of the network, and the constructs thereof, to mitigate the uncertainty associated with the process of new JV formations in the domestic and international supply chain manufacturing context. In so doing we investigate the following research questions: (1) What role do the structural characteristics of a firm's network play in mitigating the uncertainties associated with new JV formations; and (2) How do these effects differ between domestic and international joint venture formations?

The rest of the paper is organized as follows. First a review of the extant literature around network theory as well as international joint ventures is reviewed. Thereafter, specific hypotheses regarding the effect that these network variables have on domestic vs. international joint ventures are postulated. Then, the results are presented and discussed, from which conclusions are drawn. Finally, those conclusions are explored and the limitations and future research directions are detailed.

2. Literature review and hypothesis development

2.1. Global manufacturing joint venture networks

A joint venture (JV) occurs when two, or more, firms pool a portion of their resources within a common legal organization (Kogut, 1988) and a new entity is formed in order to perform a specified task. Within the supply chain management literature, a JV has been defined as a new, autonomous entity formed by two or more firms with the specific focus on the distribution of products and information (Tokman et al., 2007). Accordingly, an international JV is one where the partners of such a venture have different home countries. In this study, the focus is manufacturing JVs, both international and domestic, created with the primary purpose of sourcing, manufacturing and distributing components. Manufacturing JVs are increasingly common organizational arrangements (Buzacott and Steve Peng, 2012). For example, Tata Motors (based in India) and Fiat (based in Italy) engaged in a manufacturing JV whereby Tata will produce Fiat's premium line of automobiles (Behl, 2007). Johnson Controls, a popular US based automotive components manufacturer, supplies Fiat with “complete interiors, including door panels, instrument panels, floor consoles and rear quarter panels through a joint venture with PCMA, a division of Magneti Marelli S.p.A” (Francis, 2013:234).

Given the prevalence of this type of organizational arrangement, a number of theories have been advanced to explain the underpinning mechanisms of these equity-based partnership formations. The predominantly held view posits that a firm can become more efficient by gaining control of those portions of the business whose transaction costs outnumber the cost of direct production (Coase, 1937). The costs refer to conducting an arms length exchange (i.e. non-equity based, short term arrangement) in the intermediate product markets in which a firm operates. Essentially, if the costs of the firm's various arms length transactions are more expensive than a strategy of internalization, then, the firm should enter into some form of a collaborative agreement (i.e. a JV).

Thus, the overarching question behind much of the research in JVs is to understand how and why these arrangements emerge. For example, extant research has examined JVs through the lens of real options, finding that JVs can act as a hedging mechanism, as well as a strategic asset to the firm (Kogut, 1991). Martin et al. (1995) take a network perspective of joint ventures the US/Japanese automotive industry and examine tie structure and tie formations for Japanese Automotive firms that sell domestically and those that sell internationally. In the international context, JV's have been examined from several perspectives as well. Research has examined the effect that national culture has on JV performance, and has found empirical support for the role it plays in the market entry choice of firms in a new JV (Kogut and Singh, 1988). Conceptual frameworks have been advanced that draw from structural instability and inertia theories, to understand the formations of international JVs (Yan, 1998). Other work that explains international JVs, rooted in international economics, has been advanced that “explains the formation of IJVs in terms of eight distinct but related factors” (Buckley and Casson, 1996:874) among which are the size of the potential market, uncertainly with respect to technology, as well as the speed at which technology changes. Other work has examined international JVs leveraging a perspective rooted in bargaining power and dependence theories, and examines the stability of an international JV, based on the shifts and power imbalances of the partners in the JV (Inkpen and Beamish, 1997).

A manufacturer can have several such JVs, both international and domestic. It has been shown that manufacturing JVs constitute a network where manufacturers and suppliers are connected to each other through equity-based partnerships (Carnovale and Yeniyurt, 2014). The emergence of such networks has been suggested to arise as a result of spillovers from various, previously connected and intertwined networks (Padgett and Powell, 2012). Thus, the aim of this research is to demonstrate that firms can leverage network analysis when designing their global sourcing strategies to assuage the difficulties associated with the lack of information in the JV formation process, thus rendering them in a more fortuitous position. Essentially, “network theory refers to the mechanisms and processes that interact with network structures to yield certain outcomes for individuals and groups” (Borgatti and Halgin, 2011:1168). The network perspective, as a theoretical lens, views these structures as sets of interrelated and purposively connected, rather than disjoint or loosely assimilated units (Borgatti and Xun, 2009). The advantage that the network perspective provides for scholars is inherent at the core of the theory: the connections between individuals, dyads, or triads (Choi and Wu, 2009 a, 2009b), and by extension the general network structure are what matters (Granovetter, 1973; Mitchell, 1974). Structure in this case refers to all of the actors within a network as well as the connections among them. These interconnected entities are typically comprised of an individual actor (i.e. a firm), a dyad (i.e. two firms engaging in a joint venture) or a triad (i.e. when a manufacturer has two supply chain partners) (Wasserman and Faust, 1994).

Recently, the network perspective has gained some rather powerful traction in supply chain management. It has been suggested that more research that leverages a network perspective is needed (Galaskiewicz, 2011) citing it as a method with much