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Conceptualizing the Role of Embeddedness in Deriving the Network Competitive Advantage of Triadic Supply Chains

Konceptualizacja roli zakorzenienia społecznego w osiąganiu sieciowej przewagi konkurencyjnej triadycznych łańcuchów dostaw

Abstract

The network view can be successfully employed while investigating the role of relationships in deriving the competitive advantage of contemporary supply chains. Prior studies, when elaborating on the competitive advantage of supply chains, are mostly anchored in either the resource-based view or the dyadic view, as two complementary, but distinct concepts. Consequently, there is a dearth of studies that elaborate on the concept of network competitive advantage as the extension of relational view. To address this gap, this study aims to combine the network view of competitive advantage with embeddedness as an important dimension of the social capital. In this study, the concept of structural and relational embeddedness has been employed to offer a systematic conceptual analysis of the network competitive advantages of triadic supply chains. Based on this conceptual reasoning, we then build key theoretical propositions that aid in deeper understanding of how the relationships are shaped by the social capital to derive the network competitive advantage of supply chains.

Key words:

structural embeddedness, relational embeddedness, closure

Streszczenie

Podejście sieciowe może być z powodzeniem wykorzystane w badaniu roli, jaką odgrywają relacje międzyorganizacyjne w osiąganiu przewagi konkurencyjnej współczesnych łańcuchów dostaw. Dotychczasowe publikacje podejmujące tę tematykę są z reguły zakotwiczone w teorii zasobowej lub ujęciu diadycznym, jako dwóch komplementarnych, lecz odmiennych perspektywach poznawczych. W rezultacie brakuje badań, które podejmowałyby problematykę sieciowej przewagi konkurencyjnej będącej rozszerzeniem szkoły relacyjnej. Celem artykułu jest wykorzystanie koncepcji zakorzenienia społecznego (w szczególności zakorzenienia strukturalnego i relacyjnego) w rozpoznaniu sieciowej przewagi konkurencyjnej. W wyniku przeprowadzonych rozważań sformułowano postulaty, które umożliwiają głębsze zrozumienie roli zakorzenienia społecznego w kształtowaniu relacji międzyorganizacyjnych służących budowaniu przewagi konkurencyjnej łańcuchów dostaw.

Słowa kluczowe:

zakorzenienie strukturalne, zakorzenienie relacyjne, układ zamknięty

JEL: D02, L14

Introduction

Relationships have become the crucial issue when elaborating on the competitive advantage of contemporary supply chains. Drawing upon the strategic management literature, the relational/network view can be employed when considering relationships as the source of competitive advantage (Dyer and Singh, 1998). The relational/network view underscores that the competitive advantage is

derived for all actors involved in the process of resource sharing (Dyer and Singh, 1998). While the relational view of competitive advantage concentrates on a dyadic arrangement, formed by two actors (dyad), the network view extends its scope by involving at least three companies, establishing a triad. Consequently, Following Dyer and Singh (1998), the network competitive advantage enables all network companies to produce a supernormal profit that cannot be yielded in isolation, and can be only generated through the joint idiosyncratic

contributions of the supply chain actors. The network view highlights the network as the unit of analysis, and emphasizes the role of reciprocal resource sharing in achieving and sustaining the competitive position of all companies involved (Dyer and Singh, 1998).

Prior studies mostly focused on the role of the quality of relationships in deriving the competitive advantage of supply chains (Spekman *et al.*, 1998; Humphries *et al.*, 2007). However, in considering how network of supply chain actors affects the competitive advantage, the quality of relationships is not all that matters, the configuration of that network matters too (Carnovale *et al.*, 2017; Choi and Kim, 2008; Choi and Wu, 2009a; Choi and Wu, 2009b; Kim *et al.*, 2011; Terpend and Ashenbaum, 2012). For instance, Jarillo (1996) highlighted that network relationships allow the companies inside the network to gain and sustain the competitive advantage vis-a-vis the competitors outside the network. A number of previous studies also touched upon the impact of network configuration on performance (Frohlich and Westbrook, 2001; Kampstra *et al.*, 2006). Nevertheless, to date, no "best" network of supply chain has been identified (Autry and Griffis, 2008). In this study, we particularly refer to the concept of triad as the smallest unit of the network, composed of three actors (*e.g.* supplier, customer and service provider) directly connected by three links, taking the form of the flows of products, information and finances.

Furthermore, prior research predominantly investigated the effects of configuration on performance from the standpoint of either one actor in the network (Autry and Griffis, 2008; Lawson *et al.*, 2008; Carey *et al.*, 2011; Villena *et al.*, 2011) or the dyadic arrangement (Min *et al.*, 2008; Son *et al.*, 2016). In other words, prior studies, when elaborating on performance within supply chains, are mostly anchored in either the resource-based view or the dyadic view, as two complementary, but distinct concepts. Consequently, there is a dearth of studies that elaborate on the concept of network competitive advantage as the extension of relational view. To address this gap, we aimed to combine the network view of competitive advantage with embeddedness as an important dimension of the social capital.

To achieve the goal of study, we employed the concept of embeddedness, which "refers to the fact that economic action and outcomes ... are affected by actors' dyadic (pairwise) relations and by the structure of the overall network of relations" (Granovetter, 1992:33). Embeddedness therefore suggests that each company is affected by the social links in which it is embedded. In the supply chain context embeddedness can be defined as the extent to which a firm relies on a network of other actors (Kim, 2014a). In our paper, we consider structural

and relational embeddedness as two, the most common conceptualizations of social capital (Granovetter, 1985; Uzzi, 1997; Ring and Van de Ven, 1994; Zajac and Olsen, 1993). Relational embeddedness shows the extent and range of resources that are within supply chain's reach, while structural embeddedness demonstrates how much of this potential will be actually used to obtain and sustain the competitive advantage. Following the view of Nahapiet and Ghoshal (1998), we use two key facets of relational embeddedness, namely interpersonal trust and feelings of closeness (interpersonal solidarity). Having linked structural embeddedness with the configuration of supply chain structure and relational embeddedness with the quality of relationships, we then demonstrate how both types of embeddedness affect the resource-based competitive advantages of supply chains. Through these theoretical lenses, we formulate key propositions that aid in deeper understanding of how the competitive advantage of supply chains is shaped by the facets of embeddedness representing the social capital. Based on that, we offer a discussion on the conceptual development, with a particular emphasis on this model of the competitive advantage of supply chains.

Literature review

The Network Competitive Advantage of Supply Chains

The instrumental use of relationships and limited benefits reaped by other actors involved led to a noticeable shift in the research focus from the RBV to the network perspective (Dubois and Fredriksson, 2008; Kim, 2014b; Wilhelm, 2011). As discussed, whereas the RBV assumes that competitive advantage deals with resources owned and controlled by a single firm, the network view indicates that resources generating competitive advantage often span firm boundaries (Duschek, 2002). In fact, the network competitive advantage can be treated as the extension of the relational view, developed by Dyer and Singh (1998). While the relational view of competitive advantage concentrates on a dyadic arrangement, formed by two actors (dyad), the network view extends its scope by involving at least three companies, establishing a triad. Contrary to the RBV, whose underlying premise is to underscore the benefits reaped at the expense of other companies, the concept of network competitive advantage highlights the importance of voice-based relationships. Jarillo (1996) maintained that the network approach refers to a non-zero sum

relationship. Thereby, all participants of certain arrangement can be winners (win-win situation) (Dyer and Nobeoka, 2000; Joshi and Campbell, 2003). In the same vein, Dyer and Singh (1998) acknowledged that the network perspective takes into account that advantages of one firm are often linked to the advantages of other partners embedded in the network. In other words, the network competitive advantage represents the added value derived as a synergetic combination of network resources (Dyer and Singh, 1998, Khanna, 1998). Essentially, the network competitive advantage is a structural characteristic of the network and, as such, cannot be attributed to any single actor in the network (Duschek, 2002). Nevertheless, due to the tacit and complex nature, network resources are largely immobile and cannot be easily transferred. In other words, network resources are usually stuck to the particular section of the network (Foss, 1999). This, in turn, results in dispersal of benefits stemming from the network competitive advantage that are accrued to certain companies in different network sections. Accordingly, in line with the network view, we argue that the competitive advantage of supply chains refers to the ability to outperform competitors, by forming and sustaining multilateral relationships that enable all actors involved, sharing and enjoying necessary resources available in the network.

In the network competitive advantage, resources are inherent to network relationships (Gulati 1998; McEvily and Zaheer 1999), and integrated or activated through the interaction of network actors (Rigby *et al.*, 2000). Network capabilities can be still characterized by VRIN attributes (valuable, rare, inimitable and non-sustainable) (Foss, 1999). In other words, not only are these attributes typical for the RBV, as indicated by Barney (1991), but they may be also applied to network resources. Essentially, the uniqueness of network resources is the result of value-added benefits of innovation, generated through the network relationships. This value-added innovation allows the companies to manufacture and deliver products and services that are more competitive in terms of their price and quality. In other words, network resources are created in the result of the interaction of tangible and intangible resources belonging to the individual companies. However, Gadde and Hakansson (2001) pointed out that the boundaries between resources housed within a firm and those deployed through external relationships are usually blurred.

Following the study of Das and Teng (2003), we argue that a major driver of the network competitive advantage is interdependence between supply chain actors. Consequently, interdependence means mutual dependence in terms of the need for

resources and is a critical premise for achieving and sustaining the network competitive advantage. Following the research of Sheppard and Sherman (1998), we acknowledge that the network competitive advantage requires a high reliance of supply chain actors. As the significance of relationships in the network competitive advantage is high, the actors tend to increase their self-interest in sustaining the relationships and make effort to facilitate the other party's goals by lifting their own exit barriers (Hogarth-Scott and Dapiran, 1997). To reach interdependence, companies in the network have to increase investment in the relationships to ensure symmetry and balanced transfer of resources (Kumar *et al.*, 1995). If a symmetry is formed by larger firms, the arrangement tends to experience more innovative outcome, than the one established by smaller partners (Acs and Audretsch, 1988).

Formulation of propositions

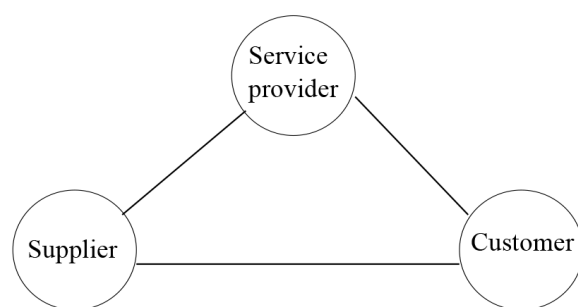
Triad as a Basic Conceptualization of Structural Embeddedness in Supply Chains

Following the view of Burt (1992), structural embeddedness refers to the overall pattern of network interactions defining, more specifically, who a particular actor reaches and how it reaches others in a network. Accordingly, among the most important facets of structural embeddedness one may enumerate the presence or absence of ties determining the network configuration (Nahapiet and Ghoshal, 2000). Essentially, the network configuration of supply chains requires at least three companies to be involved in one or more of the upstream and downstream flows of products, information and finances from a source to a customer (Mentzer *et al.*, 2001). As noticed by Wynstra *et al.* (2015), three-tier triads involve actors that perform different roles in the overall supply chain. In other words, in its basic form, a supply chain is a triad (Cooper *et al.*, 1997; Mentzer *et al.*, 2001). Consequently, in our paper, we refer this structure as the triadic supply chains. Choi and Wu (2009a) acknowledged that triads are established by either two dyads (constituted by three nodes and two links) or three dyads (composed of three nodes and three links). The latter one may be referred to as network closure which is typical for a service industry — Figure 1.

In service triads, a buyer contracts with a supplier to deliver services directly to the buyer's customer (Li and Choi, 2009). Importantly, the structure of network closure in supply chains is fundamentally

Figure 1

An exemplary triad taking the form of closure in the service industry



Source: Li and Choi (2009).

different to that encountered within a manufacturing setting. The crucial difference is that each actor has a direct connection with the other two. Wynstra *et al.* (2015) argued that such connections may be either constant or intermittent. In particular, the constant connections take place, when there is a stable partnership between the actors in a triad. For instance, Finne and Holmström (2012) demonstrated a triad in which the supplier's service capabilities are dependent upon access to certain service sites and installed base information that, in turn, require establishing a more permanent relationship with the customer. On the other side, the intermittent connections are formed when some service activities are only mobilized rarely or never. For instance, car repair shops (supplier) are only brought into contact with the policy holder (customer) when an accident is covered by the insurance company (buyer). Nonetheless, in case of a claim, there is a direct supplier-customer interaction, established temporarily (Wynstra *et al.*, 2015). In the light of the above, we allude that closure as a form of structural embeddedness may have a significant influence on the network competitive advantage of supply chains.

Closure and the Network Competitive Advantage

The concept of closure assumes that the power of social capital stems from direct relationships established in closed networks (Coleman, 1988). The term of direct ties refers to the ties established between an actor and its partners (Podolny and Baron, 1997). From the perspective of structural embeddedness, closure demonstrates that some of the firms' crucial resources can be expanded or

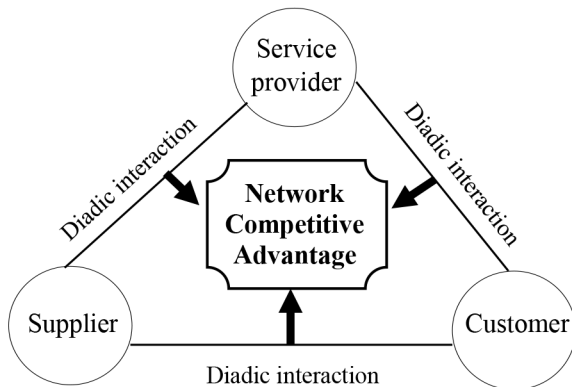
constructed beyond the boundaries of individual firms and framed within the interorganizational arrangement (Espino-Rodriguez and Rodriguez-Diaz, 2014). If there are more connections among the actors, there are also more alternatives for deriving a valued resource (Gulati, 1998; Burt, 2000; Baum *et al.*, 2000). More generally, a dense network of contacts promotes higher availability of redundant resources (Lei and Huang, 2014; Delbufalo, 2015; Nakauchi *et al.*, 2017; Parmentola *et al.*, 2018). Closure also promotes a low level of network centrality that ensures a more balanced supply chain structure whose actors manifest less opportunism and eagerness to obtain particular interests (Yang and Liu, 2012; Giuliani, 2013; Zang, 2018). In such a network, there is no single company that possesses enough strength and prominence to affect the other links. They can rather act impartially, in order to quell conflicts, and ensure the triad's continued existence (Wynstra *et al.*, 2015). Overall, a high level of network density, as well as, the low level of centrality characterizing closure, contribute to the network competitive advantage of supply chain.

The network competitive advantage in closure is grounded on the triple dyadic structures (Peterson, 1995), whose major premise is that three dyads forming closure produce effects stronger than these dyads would have ever generated individually. In other words, actors in closure are capable of yielding synergy that is unattainable by either dyad in isolation. This means that the combination of relational performance from three dyads in a triad produces effects stronger than these dyads would ever produce on their own. The triad is capable of yielding a supernormal profit generated by three bilateral relationships that is unattainable by either dyad in isolation. If these dyads (e.g., supplier-manufacturer, manufacturer-customer and supplier-customer) are examined in isolation, "they paint one picture of two companies dealing with one another" (Choi and Wu, 2009b:10). Therefore, the outcome of interplay among dyads enables to yield synergy. To put it more precisely, apart from simply capturing relational performance in a bilateral arrangement, one needs to simultaneously grasp how one dyad in a triad affects the other two dyads. This will provide us with understanding of the interplay and relational dynamics of relationships established in triads (Wu and Choi, 2005) — Figure 2.

Following Coleman (1990), we argue that closure enhances development of norms to keep the actors from imposing externalities on one another. In order to highlight synergy yielded in closure, Kogut (2000) has coined the term of Coleman rent, which underlines that, depending on the quality of relationships, the rent accrues to the group (i.e. triad), with the actual allocation to individual

Figure 2

The network competitive advantage as a synergistic effect yielded in an exemplary triadic supply chain



members determined by rules of adjudication and relative bargaining power. Duschek (2002) indicated that though there are redundant relationships between actors in closure, the Coleman-rent is still yielded and brings benefits for all participating companies. Based on the above discussion, we argue that closure enables all three actors in the triadic supply chains to create and take the most value ensuring the network competitive advantage. Therefore, in the light of the above, we propose:

Proposition 1: All three companies forming closure in the triadic supply chains are more likely to achieve the network competitive advantage.

Relational Embeddedness and the Network Competitive Advantage of Supply Chains

Closeness and trust are two attributes predominantly used to characterize relational embeddedness (Nahapiet and Ghoshal, 1998). They "represent progressively deeper degrees of relational quality: from proclivity to provide resources vis-a-vis personal familiarity (relational closeness) to a deep sense of the contact's reliability and faithfulness in resource exchange (interpersonal trust)" (Moran, 2005, p. 1135).

Relational closeness

Relational closeness reflects the strength of ties and, thus the amount of interfirm transactions in a network (Moran, 2005). The strength of a tie can be

described as either a strong or weak tie (Granovetter, 1973; Tiwana, 2008). Strong relationships manifest the extent to which a firm interacts frequently with another and exchanges knowledge and resources efficiently (Hoffmann, 2007; Rowley *et al.*, 2000). The strong relationships and frequent interaction make the supply chain partners act together closely and rely on each other's capabilities when performing a set of functions. They are engaged in joint planning and processes beyond levels reached in less close trading relationships (Wilding and Humphries, 2006).

The concept of 'tie-strength' can be also easily applied in closure (Coleman, 1990), though it was originally developed for the triadic arrangement composed of two dyads. It brings several benefits to closure. First, the strength of ties between actors affects the spread of information in a network (Granovetter 1973). The stronger ties facilitate the spread of valued information rather than weak ties (Murray *et al.*, 1981). This can be beneficial to the group of actors forming closure.

As argued by Coleman (1988), information is also a paramount form of social capital in closure. Closure provides partners with superior information about each other (Gulati, 1995; Zaheer and Venkatraman, 1995). In the same vein, Johansson and Quigley (2004) pointed out that closure reduces difficulties in circulating information to other partners, and thus alleviates the potential problems with distorted communication. The actor that is not greatly interested in information, but interested in being informed can save the time required to look for the information if he can get it from the other actor that pays attention to such matters (Coleman, 1994). Furthermore, strong ties are also more beneficial than weak ties, as they allow a greater volume of resources to be transferred among actors (Podolny, 2001). Closure fosters robust individual and collective actions as all actors know and interact with each other. In other words, closure mitigates exchange risk, enhances the likelihood that actors will establish collaboration through sharing and reinforcing resource exchange (Moran, 2005). Interestingly, in case of closure, certain resources are redundant which prevents the actors from exploitive behavior and concomitantly encourages collaboration, typical for the network competitive advantage. In the light of the aforementioned, we conclude that relational closeness can contribute to the network competitive advantages in supply chains taking the form of closure. Therefore, we propose the following:

Proposition 2: Relational closeness (closely-tied relationships) as a major facet of relational embeddedness promotes deriving the network competitive advantages of supply chains.

Relational trust

Trust can be expressed as the belief that an exchange actor will not be selfish and will not act in self-interest at another's expense (Uzzi, 1997). Coleman (1988) argued that closure is important for the trustworthiness of social structures that allows the proliferation of obligations and expectations. In other words, closure emphasizes the solidarity and trust between members of a dense network (Coleman 1990) and, as a result, contributes to mitigating tie instability (Kogut, 1989; Park and Russo, 1996; Uzzi, 1996). Correspondingly, Rowley *et al.* (2000) demonstrated that closure supports trust that encourages cooperation and curbs opportunism. In the similar vein, Putnam (1993) mentioned that social trust, arising from norms of reciprocity and networks of civic engagements, is a key factor that facilitates closure. For instance, if the positive information about the supplier within closure spreads through the social relations in the customer's social network, trust in a service provider can increase. In other words, social relations that provide information constitute a form of social capital that can be used to manage trust towards the online presence of organizations (Kuan and Bock, 2005). Trust allows the actors in closure to be more flexible and adapt more quickly in environments characterized by complexity and continuous change. As a result of this, the actors engaged in closure are capable of gaining advantages in comparison to other forms of governance (Uzzi, 1996; Uzzi, 1997). Following the view of Mody (1993), we argue that trust-building initiatives play a significant role in deterring potential opportunistic behavior of supply chain actors, and thus enhancing the network competitive advantage. Nahapiet and Ghoshal (1998) acknowledged that trust has an impact on anticipation of value through the social interaction and thus encourages the actors to deepen relationships in closure. Therefore, on the basis of the above arguments, we propose that:

Proposition 3: Trust (trust-based relationships) as a major facet of relational embeddedness is more likely to shape the network competitive advantage of supply chains.

Discussion and conclusions

In this paper, we formulated key propositions aimed at deeper understanding of how the competitive advantage of supply chains is shaped by structural and relational embeddedness. Specifically, by using the concept of embeddedness, we shed a light on understanding the network competitive

advantage of triadic supply chains.

The common premise of the network view is using relationships in deriving the competitive advantage of supply chains. We then argue that an important aspect of deriving the competitive advantage of supply chains, is establishing the relationships that are shaped by two dimensions of the social capital, namely structural and relational embeddedness. We consider closure as an important facet of structural embeddedness that is relevant for deliberating on the network competitive advantage of supply chains. Generally, closure demonstrates the competitive advantage of supply chains through a cohesive network. The closed network of relationships enhances relational reciprocity and promotes interorganizational balance, which in turn, contributes to more even distribution of benefits among the actors. We acknowledge that the network competitive advantage view considers the relationships as closely tied and trust-based. Specifically, the relationships are characterized as stable and long-lasting, and the actors are considered to be selfless and caring about other's intentions. Ideally, durable relationships are based on mutual dependence and reciprocity. Therefore, to gain the competitive advantage, the actors in a triad dedicate a significant portion of their internal resources to the relationships. In other words, they are committed to each other for mutual benefits (Kim and Choi, 2015). Keeping a balance in sharing the benefits will contribute to the success of long-term and closely-tied relationships, which will then have positive effects on deriving the network competitive advantage (Wit and Meyer, 2010).

However, one should be aware that the research concerning the closely-tied relationships could be complemented by providing a discussion on the arm's length relationships, placed on the opposite side of relational closeness. Juxtaposing a dimension of arm's length relationships with a described conceptualization of trust-distrust relationships, yields two binary sets of relationship characteristics, namely arm's length and trust-based, and arm's length and distrusted. The first set is referred to by Kim and Choi (2015) as the gracious relationships, while the second set can be termed as the atomistic (discrete) relationships.

Interestingly, actors in the gracious relationships trust one another, though they tend to establish weak ties and infrequent interaction (Kim and Choi, 2015). In line with prior studies, a combination of trust and weak ties can positively contribute to the competitive advantage through innovation (Rowley *et al.* 2000; Perry-Smith 2006). Therefore, the gracious relationships can potentially be the source of network competitive advantage. Yet, developing the gracious relationships requires further investigation, as indicated in this study, the network

competitive advantage calls for stability, a high frequency of interactions and closely-tied relationships that are worked out in a longer time frame. On the other hand, the atomistic relationship is a denial of embeddedness, as it discards the role of relationships in gaining the competitive advantage. The underlying premise of atomistic relationships is conducting market transactions between loosely coupled actors that maintain impersonal, arm's length and constantly shifting exchange ties. Therefore, the atomistic relationships are mostly characteristic for the neoclassical economic theory, whose underlying premise is that the actor having its particular goals acts independently and wholly

selfishly (Coleman, 1988). As the study highlights the importance of relationships in shaping the competitive advantage of supply chains through the theoretical lenses of embeddedness, adding the above types of relationships would definitely contribute to adding to the more holistic picture of the issues considered in the study.

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Kierownik Katedry Logistyki Ekonomicznej w Uniwersytecie Ekonomicznym w Katowicach. Jego zainteresowania badawcze obejmują w szczególności problematykę zarządzania ryzykiem, kształtowania rezyliencyjnych łańcuchów dostaw i osiągania sieciowej przewagi konkurencyjnej łańcuchów dostaw. Jednocześnie piastuje funkcję kierownika w projektach badawczych, finansowanych przez NCN, dotyczących koordynacji sieciowej i złożonych systemów adaptacyjnych.

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