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## **Chapter 4**

# **A STUDY OF MANAGERIAL NETWORK COGNITION AMONG FIRMS TENDERING FOR THE 2014 OLYMPIC GAMES IN RUSSIA**

### **ABSTRACT**

Despite the significant findings of cognition studies on intra-organizational perception on an individual level, as well as the extensive research on the performance effects of inter-organizational networks, little is known about the effects of managerial cognition on inter-organizational networks. An empirical study on managerial inter-organizational network perception will contribute to social network and cognition literature, by providing better understanding of antecedents of social networks, and consequences of (in)accurate network perception. My study is first to empirically test performance effects of managerial inter-organizational network cognition, extending past work on managers' mental models. The setting of my study is the tender competitions organized for the 2014 Winter Olympic Games in The Russian Federation. My study focuses on managers' cognitive maps of key project officials' network. I examine how the accurate perception of key project officials' network affects the winning of the tenders. I analyzed 78 firms that were participating in 5 different tenders, which were held by 4 separate organizations. The analysis revealed that managerial network cognition does matter. Especially

accurate perception of network content and structure are strongly related to winning of the tenders. Furthermore, network centrality plays a moderating role in the relation between key officials' network perception and winning of the tenders.

**Keywords:** Managerial cognition, networks, project based organizations, tenders.

## 4.1. Introduction

Networks have found to enable the access of tacit knowledge (Coleman, 1990), improve sales growth (Lechner, Dowling, Welppe, 2005), financial performance (Hansen, 1995), new venture survival (Raz & Gloor, 2007), access to new information and identifying new opportunities (Granovetter, 1973; Burt, 1992; Adler & Kwon, 2002), and access to sensitive and valuable knowledge (Witt, 2004). Although network ties are crucial for firm performance, how networks emerge and evolve, and how effective networks are created is relatively unexplored (Stuart & Sorenson 2007).

Most of the existing network literature treats network structures as exogenous factors, and something that entrepreneurs or enterprises are actively engaged in. However, actors are both strategically and differentially able to construct ties, and the positions in social networks arise in part as a function of the outcome variable. Thus, creating the endogeneity problem (Stuart & Sorenson, 2007). Furthermore, the deterministic account of tie formation does not explain how firms create new ties outside their network. It states that firms with attractive resources, and direct and indirect ties can form new ties, but it does not explain how firms that lack these resources and ties can extend their network and form new ties (Hallen & Eisenhardt, 2012).

Related to the above mentioned issues, are the observations of Kim and Aldrich (2005) where they argue that the full potential of social networks is seldom realized, because individuals are often faced with bounded rationality. The cognitive limitations force individuals to rely on safe and familiar networks, rather than pursuing the potential gains from a

more diverse network. Moreover, recent studies (e.g. Borgatti & Cross, 2003) suggest that existence of the networks alone does not automatically lead to finding of the required resources. Successful seeking of information depends on the knowing which resources an actor possesses, being able to accurately evaluate these resources of the actor, and being able to gain timely and cost effective access to that actor. In sum, questions concerning the endogeneity problem and antecedents of social networks remain largely unanswered (Borgatti & Cross, 2003; Kim & Aldrich, 2005; Stuart & Sorenson, 2007).

Arguably one of the key aspects in forming and fully exploiting social networks is the accurate knowledge on the structure of the network and the actors within the network. Engaging in strategic networking activity without knowing who knows who and who knows what within a network might end up being a time consuming and fruitless effort. Mattson and Johanson's (1992) work on 'network theory' is one of the early attempts to describe the perception of network characteristics by managers. Mattsson (2002) argues that network pictures essentially represent actor's own network theory that is used to describe characteristics of the network. Network pictures emerge as belief systems without prior managerial interaction and experience with all of the aspects of the network (Pick, 1999). These network pictures are thus cognitive structures, similarly to Weick's (1995) notion of sense making. Through individual sense-making and representational process these network pictures contribute to the process of organizations' and networks' identity construction (Holmen & Pedersen, 2003).

Cognitive network studies on an intra-organizational level revealed that individuals with accurate picture of the advice network are rated as more powerful by others within the organization (Krackhardt, 1990), accurate perception of informal networks is crucial for managers ability to manage the organization (Krackhardt & Hanson, 1993), and that accurate perception of social networks can enhance the performance of externally-oriented work teams in organizations (Ancona, 1990; Ancona & Caldwell, 1992). However, little is known about the relation between inter-organizational networks and firm performance (Mcnamara, Deephouse, & Luce 2003; McNamara, Luce & Thompson, 2002). Furthermore, most of the existing studies on the relation between social networks and firm performance have neglected the role of network perception. The limited research on inter-organizational network perception might be due to the fast changing character of such networks, which arguably make them more challenging to study.

Nevertheless, an empirical study into the effects of managerial cognition on inter-organizational networks could have significant theoretical and practical implications. Especially considering that perception is often biased (Kilduff et al., 2008; Krackhardt, 1987; Casciaro, 1998) and that on an individual level accurate networks maps are beneficial and misperceptions can be costly (Krackhardt, 1990; Burt & Ronchi, 1990). It can contribute to social network and managerial cognition theory, and provide practical information for entrepreneurs and managers. It is important to understand what consequences a biased perception can have and under what conditions. Additionally, it is interesting to know what are

the performance benefits of an accurate perception, are there any contingencies that influence the relation between perception and performance, and what perception accuracy is important and what is not. Finally, studying managerial inter-organizational cognition will enable better understanding of the antecedents and underlying mechanisms of social networks. Thus, how social networks evolve and develop, and how they relate to firm performance.

I conduct an empirical study on the managers' accurate perception of external networks and their performance effects in the context of temporary project networks. Network perception accuracy consists of perceived network structure (whether managers are aware of presence and absence of ties between tender officials) and network content (whether managers are aware of the resources possessed by tender officials). The contributions of this study are Threefold. First, this study extends network research by examining the antecedents of social networks (Stuart & Sorenson, 2007), and the role of cognition (Borgatti & Cross, 2003; Kim and Aldrich, 2005). Second, while most research on perception accuracy confirms a positive relation between perception accuracy and outcome variables, it is yet unclear what type of perception accuracy is best related to outcome variables (Kilduff et al., 2008). This study contributes to cognition literature by examining perception accuracy of different aspects of the network, namely network content accuracy and network structure accuracy. Moreover, this study also looks at the role that contingencies play on the relation between perception accuracy and performance. Finally, the setting of my study is the tender competitions organized for the 2014

Winter Olympic Games in The Russian Federation. In such context there is no prior history of networks, the relationships are fluid and have a short life span. My longitudinal analysis enables me to effectively study the managers' inter-organizational network development from the very start and examine how the network is evolving and the mechanisms through which the network is influencing firm performance. It addresses some of the issues that were observed by Stuart & Sorenson (2007) concerning the endogeneity problem, and antecedents and mechanisms of social networks.

## **4.2. Research setting**

### ***4.2.1. 2014 Winter Olympic Games***

The setting of the present research is the 2014 Winter Olympic Games in the city of Sochi, which is located in the Krasnodar region of Russia. Holding of such event requires the organizer to prepare a wide variety of modern facilities for sport players, delegates and tourists from different countries. Concurrent with preparation of the Games the government of the Russian Federation has planned to transform the region into the world-class popular resort for sport, business and leisure tourism that will attract visitors all year long. The infrastructure, which has been developed in the preparation for the Olympic Games will become a significant legacy for the city of Sochi and the whole region and will essentially improve the quality of life of the local residents. The preparation for the Games includes construction of the modern roads, railways, hotels and new transport hubs, modernization of engineering infrastructure and a sufficient increase in power capacity.

According to the Federal Target Program, in 2007 the Federal budget of Russian Federation has allocated 327 billion rubles (approximately US\$9 billion according to the exchange rate of 2007) for the hosting of 2014 Winter Olympic Games and for the general development of the area in and around the city of Sochi. Additionally, there is also financing from non-budget sources (including private investor funds), which will be distributed in the following way: US \$2, 6 billion will be spent on the development of the tourist infrastructure, US \$270 million - for the transport infrastructure, US \$100 million - for power supply facilities, and US \$500 million - for the construction of the Olympic venues.

#### ***4.2.2. Tenders***

Tender competitions are being held by several organizations in order to select companies that will be contracted to execute 2014 Winter Olympic Games related projects. Competitive tenders for the construction of the Olympic venues and development of the Krasnodar region are being held among both National and International companies. The companies can participate in tenders in different sectors, such as: construction and assembly works, design and survey works, procurement, real estate valuation and development, accounting, transportation and other areas. The duration of tender competition and consequent selection procedure is limited in time and varies between several weeks to several months. The selection procedure is conducted by officials of organizations that are in charge of the tenders. Several companies can be selected as winners for

each of the tenders (depending on the size of the tender and the size of the participating companies).

The setting of tender competitions provides us with a unique opportunity to examine the creation and evolution of the networks between tender competing firms and tender officials. Enabling us to gain deeper understanding of how different features of inter-organizational networks translate into valued outcome.

#### ***4.2.3. Networks in the Russian context***

Most transition economies have a culturally based activity of offering or receiving favored treatment. In Russia such activities are termed as *blat*. *Blat* is culturally rooted tradition that has generally been viewed as necessary, ethical, and reasonable for obtaining personal benefits and conducting business (Khapova & Korotov, 2007; Lovell, Ledeneva & Rogachevskii, 2000; Puffer et al., 2010). *Blat* generally takes place through personal relationships or networks, with transactions that include the expectation of reciprocity (Johanson & Johanson, 1999). *Blat* differs from bribery (*vziatki*). In many cases money is not a factor in *blat* (Puffer et al., 2010). Bribery entails a short term relation between parties and typically requires an illegal monetary payment for certain goods or services. In contrast, *blat* is a longer-term network relationship that is not even mentioned in the Russian criminal code (Lovell et al., 2000).

The tenders that I have selected for this study so called “close tenders” whereby the selection of the winners is not open for public. In such tenders the process of decision making is generally accompanied by

extensive networking between the managers of the tendering firms and the leaders of organizations that are in charge of the tender competitions. These are persons that enjoy great deal of influence within the organization on the basis of either their formal position or their unique knowledge and expertise. Accordingly, these organizational leaders play a key role in determining the winners of tender competitions. Having good relation with these organizational leaders can be of significant importance for tender participating companies. It is therefore important for the managers of the tendering firms to have an accurate knowledge of the resources that these officials possess (network content), and their mutual relations (network structure). This information will enable managers to quickly locate and engage in networking activities with key tender officials who could provide necessary tender related information or be able to influence the tender outcome.

Russian entrepreneurs have traditionally relied on their networks and embedded practices to succeed businesswise, and currently entrepreneurs routinely offer favors to public officials, ranging from local police and fire authorities to politicians in local and federal governments, in order to start businesses and keep them operating (Puffer et al., 2010). Blat will effectively enable tender participating firms to positively influence their asymmetric power relation with tender officials. Firms that will be able to establishing a close relation with tender officials, based on mutual trust and reciprocity can expect preferential treatment and access to key information. Consequently, this will significantly improve their chances of

winning the tenders. Networking can thus play an important role in the outcome of the tender winners' selection process.

In terms of power dependence theory of Emerson (1962) there is an asymmetric power relation in the exchange network between tender participating firms and tender officials. The concept of dependence in exchange networks is central in power dependence theory. Emerson (1962) argues that "power of A over B is equal to and based upon the dependence of B upon A" (p.33). According to Martin (1971) this dependence in the relationship lies in the A's ability to mediate in the distribution of resources which are valued by B but not easily obtained from sources other than A. The French and Raven (1959) paradigm is often used to categorize the types of power resources that are held by A. These resources can be rewards, coercion, legitimacy, identification, and expertise. The tender officials in Olympic tenders hold rewards in the form of selecting tender winners, which in turn makes the tender participating companies dependent on tender officials.

Negotiation is found to be one of the possible strategies for one channel member to cope with another member's power (Rosenberg and Stern, 1971; Stern, Bagozzi, and Dholokia, 1977; Stern and Gorman, 1969; Walker, 1970; Wilemon, 1972). In the context of the Olympic tenders the tender participating companies are in an asymmetric power relation with tender officials. Tender officials are able to select tender winners, thus making tender participating firms dependent from them. In such asymmetric power distribution "the consequences for low-power person are usually clear-he will enact responses or make other changes the high power person

desires” (Schopler, 1965). For tender participating firms the negotiation process with tender officials is a major concern. The efficiency of the process has a direct impact on the possibility of the firms to win the tenders.

I have examined the network structure of tender participating firms and key tender officials and content of officials in organizations that are in charge of the tender competitions. Borgatti and Foster (2003) argue that there are two streams of social capital research, the structuralist and connectionist. The structuralist is represented by work of Coleman (1990) and Burt (1992), where the focus is on the structure of ties and the position of the actors within the network. The connectionist stream is represented by works such as that of Lin (2001), whereby the focus is on the resources that are existent within the social ties. The success of the actor lies in his ability to draw resources and information that are present within the network. In this study, network content refers to the required resources (financial resources, information, emotional support, etc...) in the network. Whereas, network structure is the pattern of direct and indirect ties between actors of the network.

### **4.3. Literature review**

#### **4.3.1. Cognitive networks**

Most of the inter-organizational studies on managerial cognition have focused on environmental factors such as: environmental dynamics, complexity, competitive groups, and competitors’ strategies (Desmond, Westgren, & Sonka, 2009; Hodgkinson, 1997; Kaplan, 2011; and McNamara,

Luce, & Thompson, 2002). However, despite the findings of Porac, Thomas, & Baden-Fuller (1989) and the growing importance of inter-organizational networks on firm performance (Gulati, 1999; Powell, Koput, White & Owen-Smit, 2005) there has been little empirical research on managerial perception of inter-organizational networks.

Network ties can occur on both individual and organizational level. The ties can be direct or indirect; they can vary in terms of intensity and outcome (Davidsson and Honig, 2003). The body of literature on the importance of networks has been significantly growing in the recent years, and previous research at the firm-level has demonstrated that social networks positively influence a wide range of outcomes. Networks can be used to access advice, social support, sensitive, tacit and valuable knowledge/information, opportunities, and external resources (Adler and Kwon, 2002; Aldrich and Zimmer, 1986; Birley, 1985; Granovetter, 1973; Burt, 1992; Ozgen and Baron, 2007; Raz & Gloor, 2007; Shane and Cable, 2002; Stam and Elfring, 2008; Witt, 2004). Networks can also positively influence sales growth, new venture survival, financial performance, product innovation, status, and industry wide network formation (Coleman, 1990; Hansen, 1995; Lechner, Dowling, Welpe, 2005; Stuart, Hoang, and Hybels, 1999; Tsai and Ghoshal, 1998; Walker, Kogut, and Shan, 1997).

These benefits that are embedded in the personal networks are referred to as social capital (Hoang and Antoncic, 2003; Stuart and Sorenson, 2007). There are many ways by which the concept of social capital can be defined (see Adler & Kwon, 2002); however, the different

definitions generally fall along the content versus structure continuum. Some researchers argue that the usefulness of social capital is primarily defined by the availability of the required resources within the network (e.g., Lin 1999). In this approach the focus is on the nature of the content (financial resources, information, emotional support, etc...) that network members exchange within their networks (e.g., Brehm and Rahn 1997; Fukuyama 1995; Putnam 1995). Whereas, other researchers focus on the networks' topology. Network structure is the pattern of direct and indirect ties between actors of the network. The general proposition is that the position of the actor within the network structure significantly influences the flow of resources, subsequently influencing performance. (Hoang and Antoncic, 2003).

Intra-organizational studies on managerial cognition reveal significant implications of network perception on individual level. Individuals with accurate picture of the advice network are rated as more powerful by others within the organization (Krackhardt, 1990). Accurate perception of informal networks is crucial for managers' ability to manage the organization (Krackhardt and Hanson, 1993). Accurate perception of social networks can enhance the performance of externally-oriented work teams in organizations (Ancona, 1990; Ancona & Caldwell, 1992). Boundary-spanning can be better performed by individuals who have an accurate perception of social paths through which resources can be obtained (Burt, 1992).

Overall, the past research on social capital suggests a positive relation between network structure and performance and network content

and performance. Inter-organizational studies on managerial cognition reveal a positive relation between accurate environmental perception and performance, and intra-organizational studies on managerial cognition reveal a positive relation between accurate network perception and performance. As such, I expect a positive relation between accurate managerial performance of inter-organizational (tender officials) networks and firm performance (winning of the tender) in the context of 2014 Winter Olympic Games tender competitions.

#### ***4.3.2. Managerial cognition***

Networking and negotiations are actions that need to be undertaken. However, prior to undertaking these actions, it is necessary to have an accurate perception of the network. Knowing which resources are located within the network and the structure of the network will greatly improve effectiveness of networking. Thus, the effectiveness of tender managers' actions are in part dependent on their perception of organizational leaders' network.

The idea that managerial actions are in part influenced by their cognition was first presented by Simon & Barnard (1947) in their study on bounded rationality. Similarly, Weick (1979) argues that members of organizations are engaged in an ongoing process of sense-making when faced with changing environmental factors whereby the continuous flow of information is interrupted. Weick (1993: 636) noted that: "organizations falter because of deficient sensemaking. The world of decision is about strategic rationality. [...] The world of sensemaking is different.

Sensemaking is about contextual rationality.” Managerial action is thus influenced by managerial cognition on environmental factors.

Research on managerial and organizational cognition has concentrated primarily on the structure of knowledge and its implications on the organization (Gioia and Manz, 1985; Laroche, 1995). The concept of knowledge structure is related to theory-driven information processing. This concept has been developed in clinical neurology and has gradually moved to modern psychology. Knowledge structures is a mental template that is used by individuals to give form and meaning to informational environment (Walsh, 1995). The research on cognition in organizations was preceded by growing interest in early 1980s in interpretive side of organizations that was being incorporated into strategic management (Kaplan, 2011). Cognition perspective addressed the question of organizational response to the environment, suggesting that decision makers face complexity and uncertainties of the environment, and their response is mediated by the interpretations they made of the environment. Need for the interpretation can be based on the cognitive limits of the managers as suggested by work of March and Simon (1958), or due to the uncertainties that could not be resolved because the range of outcomes are unknown (Knight, 1921). The cognitive frames are thus the means by which managers could make sense of the environment that influences their strategic choice and action (Daft and Weick, 1984). Following theories of population ecology (Hannan and Freeman, 1977), transaction cost economics (Williamson, 1979), and resource dependence (Pfeffer and Salancik, 1978) cognition perspective brought the focus on the actions of the

managers. Suggesting that it is the actions of the managers within the organizations that determine the outcome instead of the structural features of the organization.

Studies in cognition and strategy examined cognition of different aspects of the environment such as: rivalry (Lant & Baum, 1995; Porac, Thomas, & Baden-Fuller, 1989; Porac & Thomas, 1994; Porac, Thomas, Wilson, Paton, & Kanfer, 1995), environmental change (Milliken, 1990), and external constraint (Fiol, 1989).

The empirical study of Porac, Thomas, and Baden-Fuller (1989) on Scottish knitwear manufacturers, found that rivalry was a cognitive construct that was based on the firms that were identified by managers as competitors. The results of the study revealed that Scottish knitwear manufacturers were stratified in different groups of firms that held their own competitive definitions and strategic recipes. The firms had a strong inward-oriented strategic bias, whereby they disregarded foreign low cost producers as their competitors. They believed to have a competitive advantage that could not be matched by foreign firms. The study of Barr (1998) found that managers of different pharmaceutical firms interpreted changes in the environment differently. They acted to the events only when their interpretations had evolved to a point whereby a substantial impact on performance was recognized. Osborne, Stubbart & Ramaprasad (2001) also investigated pharmaceutical firms and found that firms tended to group together according to the themes they pursued and that there was a significant relation between these cognitive groups, and subsequent strategic action and success of these actions. The study of Cho & Hambrick

(2006) on deregulation in airline industry found that changes in top management team's focus of attention resulted in subsequent changes in strategic actions. Kaplan, Murray & Henderson (2003) conducted a longitudinal study among 15 pharmaceutical firms to the emergence of biotechnology. They found significant relation between changes in managerial attention and efforts to publish in scientific papers and receive patents.

Table 9 provides an overview of some of these studies and the main findings. In sum, most of these studies have focused on how perception on environmental factors influences managerial action, which in turn is related to outcome variables. It is managerial action that is directly related to outcome. However, managerial action is strongly influenced by managers' cognition on environment. Thus, accurate perception of the environmental factors is crucial for managerial decision making and is indirectly related to outcome variables.

**Table 9:**

**Main findings of the studies on environmental perception of managers**

<u>Studies</u>	<u>Independent variable</u>	<u>Dependent variable</u>	<u>Findings</u>
Ancona, 1990; Ancona & Caldwell, 1992	Intra- organizational network perception	Work teams performance	Accurate perception of social networks can enhance the performance of work teams in organizations
Burt, 1992	Perception of social paths	Boundary- spanning	Boundary-spanning can be better performed by individuals who

			have an accurate perception of social paths
Cho and Hambrick, 2006	TMT focus	Strategic action	Changes in top management teams' focus of attention were associated with subsequent changes in strategic actions
Day and Lord, 1992	TMT knowledge structures	Organizational strategy	Knowledge structures of managers is related to the organizations' strategies
Fiol, 1989	CEO inter-organizational perception	Joint venture formation	CEO's perceptions of interdivisional boundaries, predicts the formation of joint ventures
Gioia & Chittipeddi, 1991	Intra-organizational cognition	Strategic action	Significant relation between university president's sense-making and sense-giving activities and change effort in the university
Krackhardt & Hanson, 1993	TMT intra-organizational network perception	Effective management	Accurate perception of informal networks is crucial for managers' ability to manage the organization
Löwstedt, 1993	Cognitive structures	New technology implementation	Cognitive structures of key actors influences the implementation of new design technology
Porac, Thomas & Baden-Fuller, 1989	Network perception	Strategic action	Rivalry is a cognitive construct based on the firms that were identified by managers as competitors

Thomas, Clark & Gioia, 1993	CEO inter/intra-organizational scanning	Strategic action/performance	Significant relation between scanning and interpretation behavior of CEOs and strategic action and performance
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### 4.3.3. Hypotheses

#### 4.3.3.1. Strategic networking

Key to the managerial cognition literature is the idea that managerial action is influenced by managerial cognition (e.g., Simon & Barnard, 1947; Weick, 1979; and Weick, 1993: 636). Past research on inter-organizational and intra-organizational cognition reveal a significant and positive relation between accurate environmental perception and performance (e.g., Ancona, 1990; Ancona & Caldwell, 1992; Burt, 1992; Cho and Hambrick, 2006; Day and Lord, 1992; Fiol, 1989; Gioia and Chittipeddi, 1991; Krackhardt and Hanson, 1993; Löwstedt, 1993; Osborne et al., 2001; Porac et al., 1989; Thomas et al., 1993). In the context of 2014 Winter Olympic tenders, accurate perception of inter-organizational networks can similarly influence managerial action. Given the importance of the networks in the Russian context as well as the closed nature of the tenders, managers will look to establish close contacts (*blat*) with tender officials in order to receive preferential treatment and possibly get access to additional information that could benefit the quality of their tender proposal.

Networking that is aimed at improving firm performance is considered as strategic networking (Miller, Besser & Malshe, 2007). Strategic networking is focused on the development of reciprocal relationships based on trust (Borch and Huse, 1993; Hoang and Antoncic, 2003; Jarillo, 1988).

Networking of the tender competing firms that is aimed at establishing close relations (*blat*) with key tender officials in order to receive benefits that can influence the winning of the tenders, can thus be conceived as strategic networking. The outcome of strategic networking can influence the asymmetric relation between tender participating companies and tender officials. The success of strategic networking is dependent on managerial action, which in turn is influenced by managerial perception of inter-organizational networks.

Burt (2000) argues that the network structures are used to replace information in cases where available information is highly ambiguous. In the case of the selected 2014 Winter Olympic tender competitions the decision making process is closed. There are several criteria that are used to select winning companies, this is in contrast to most tender competitions whereby the tender is allocated on basis of lowest cost. Moreover, the selection process is closed and there is little or no information on how the winning companies are selected. The decision on tender outcomes is formed in a network clique (a small cohesive group of organizational leaders that are in charge of the tender competition). In similar situations network structure has played an important role in replacing information (Podolny, 1993). As such, accurate perception of ties between tender officials, and the strength of these ties (network structure) will allow the managers of tender participating firms to engage in brokerage activities in order to come in direct contact with these influential officials. By network structure I refer to the ties between tender officials. That is, accurate knowledge on who is connected to whom and the type of relation that they

have with one another. Knowing who knows who will make it easier to contact centrally located people within the officials' network or at least contact those officials that are connected to centrally located officials. Whereas, managers that lack accurate perception of officials network might spent valuable time and effort on establishing ties with officials who are not directly or indirectly central within the officials' network. Consequently, their influence and access to resources is likely to be limited.

*H1a: Managers' structural accuracy will be positively related to winning of the tenders.*

Having an accurate perception of the resources that tender officials possess (network content), will enable the tendering companies to localize those tender officials that have greatest influence and/or knowledge of tender competition. By network content I refer to the expertise and knowledge that tender officials hold.

*H1b: Managers' content accuracy will be positively related to winning of the tenders.*

Structural and content accuracy enable managers to search more efficiently and effectively, and thus, improve the quality of the acquired information by decreasing the redundancy. However, engaging in brokerage activities without knowing the location of the required resources will arguably be less effective for finding the required information and vice

versa, knowing who holds what resources without knowing how to come in contact with these actors will also be less effective than when the managers of the firm have accurate perception of both network structure and network content. Effective network search thus requires knowing both who knows who and who knows what. Knowledge on network structure reduces search path while content knowledge reduces the time needed to identify the search target. Perception on network structure and network content ultimately positively influence the tender proposal quality and negotiation process, which in turn are positively related to winning of the tenders. Firms that lack an accurate perception of the tender officials' network will be less likely to win the tender competitions. Without the right perception of the tender officials' network the managers of these firms will not be able to engage in networking activities with key officials that can provide inside information for the improvement of the tender proposal. Gaining access to these key officials will also provide for an opportunity to engage in a negotiation process that could influence the decision outcome on the tenders in favor of their firms.

*H1c: Interaction between managers' structural and content accuracy will be positively related to winning of the tenders.*

#### *4.3.3.2. Moderating role of interaction frequency with key tender officials*

Previous research suggests that identifying information within a social network can depend on the position of the actor within the network (Aldrich & Kim, 2007). Studies have shown that centrally positioned actors

within the network are able to quickly and accurately identify key actors, have a better view of the network as a whole, and can spot opportunities faster than other members (Singh, Hansen, and Podolny, 2010; Stuart & Sorenson, 2001). Bondonio (1998) identified degree centrality and demographic and social distances between network actors as strong predictors of cognitive accuracy. Observers' position in the structure of the organization contributes to determining accuracy in social network perception (Casciaro, 1998).

Literature on networking presents accumulating empirical evidence for the positive link between networking and success of actors (e.g. Adler and Kwon, 2002). The success is facilitated by their interaction with other actors in social networks. In the context of 2014 Winter Olympic tenders, having accurate information on tender officials' network structure and content will only be of benefit if the managers interact with these officials. It is only through interaction that managers can receive key information on tender competitions that they can use to improve their tender proposal. Interaction with key tender officials will enable the managers to establishing close relations with key tender officials and receive information that can be used to improve tender proposal quality.

Thus, I expect a moderating role of interaction frequency with key tender officials in the inter-organizational network perception-information acquisition relation. Key tender officials (those who have a central position within the officials' network and/or possess key resources and knowledge) will have an accurate perception of tender officials' network, and have access to most information on tender competition. Managers that regularly

interact with these officials will be able to access the information that they possess to improve their tender proposal quality and their negotiation position.

*H2a: The relationship between managers' structural accuracy and winning of the tenders will be stronger for firms that frequently interact with key tender officials, than for firms with less frequent interaction.*

*H2b: The relationship between managers' content accuracy and winning of the tenders will be stronger for firms that frequently interact with key tender officials, than for firms with less frequent interaction.*

#### *4.3.3.3. Moderating role of tender proposal quality*

Tender proposals of participating firms are being judged by tender officials on their quality, cost effectiveness, efficiency, available technology, and personnel. Quality refers to whether the projects that have been completed by the given firm were of better or worse quality compared to similar projects that have been completed by its competitors. Cost effectiveness refers to the price difference of similar projects with its competitors. Efficiency has to do with the speed by which a given project has been (will be) completed, and whether the project has been completed in the timeframe that has initially been agreed. Available technology relates to the quality and sophistication of the technology and machinery that participating firm has. Finally, personnel refer to the quality of the employees of the firm, their level of education and experience. The

competing firms need to present information on these criteria to convince tender officials that their firm and their tender proposal meet all of the required criteria. However, how exactly do the tender officials judge the proposals, and what information can be crucial in this process is unknown.

The quality of tender proposal will moderate the relation between accurate network perception and winning of the tenders. I propose that this information will be more valuable for those firms where the tender proposal is of lesser quality. That is, firms where managers' perceive that their tender proposal is of lesser quality than that of their competitors will benefit most from networking with tender officials.

*H3: The relationship between managers' perception accuracy of officials' network and information acquisition will be stronger for firms with lesser quality tender proposals.*

#### *4.3.3.4. Mediating role of information acquisition*

A key aspect of tender officials' resources is information related to tender competitions. Information on how exactly the tender proposals are judged and which aspects are regarded as more important can be used by managers to further improve their tender proposal. Without the necessary information the managers of these firms will not be able to engage in networking activities with key officials, and will not be able to improve the tender proposal.

Figure 2 presents the conceptual model underlying the predicted relationships between network perception, information acquisition, and

winning of the tender. The rationale of the conceptual model is that perception on network structure and network content facilitates the establishment of *blat* with tender officials. Interaction with these officials provides access to key information that can be used to improve the tender proposal, which in turn will positively influence the winning of the tenders. Thus, without the access to key information the benefits of accurate network perception are likely to be limited. Thus, I expect that information acquisition will mediate the relation between accurate network perception and winning of the tenders.

*H4: Information acquisition partially mediates the relationship between network perception and winning of the tender.*

Continuing the rationale of the model, I expect that accurate perception of network structure and network content will both be positively related to information acquisition.

*H5a: Managers' structural accuracy will be positively related to information acquisition.*

*H5b: Managers' content accuracy will be positively related to information acquisition.*

*H5b: Interaction between managers' structural and content accuracy will be positively related to information acquisition.*

#### 4.3.4. Research framework

Figure 2:

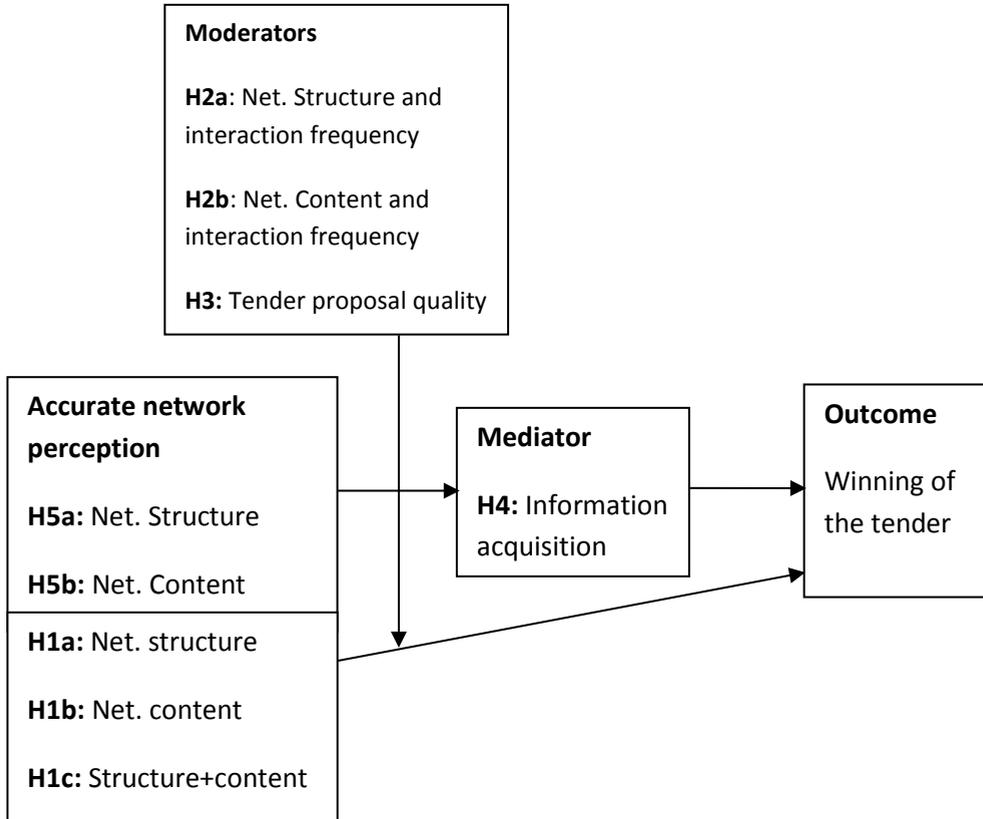


Figure 2 presents the conceptual model underlying the predicted relationships between network perception, information acquisition, and winning of the tender. The rationale of the conceptual model is that structural accuracy and content accuracy facilitate the establishment of networking/*blat* with tender officials. These officials in turn provide key information that can be used to improve the tender proposal, which in turn will positively influence the winning of the tenders.

#### **4.4. Data**

The State Corporation on Construction of Olympic Venues and Development of Sochi as Mountain Climatic Resort, called “Olimpstroy”, was founded in 2007 in order to coordinate and manage the construction activities regarding the Olympic venues. “Olimpstroy” implements the ambitious program, attracting private and state investments. The corporation holds competitive tenders and monitors the course of construction of Olympic objects. However, it is not the only organization that holds competitive tenders related to the 2014 Winter Olympic Games. There are various public and private organizations that hold tenders on the projects related to the Olympic Games and the overall development of the Krasnodar region. These organizations similarly subcontract national and international firms for the execution of these projects. The companies can participate in tenders in different sectors, such as: construction and assembly works, design and survey works, procurement, real estate valuation and development, accounting, transportation and other areas.

For this study I have chosen to focus on tenders that are being held by various public and private organizations such as local and federal municipalities and private subcontractors. There are three main reasons why I have not included tender competitions from “Olimpstroy” in my study. First, most of the tenders that are being held by “Olimpstroy” concern very large objects, which in turn would put the focus only on few large companies. Second, most of the tenders on these large projects had already been conducted prior to the start of my study. Finally, the decision

making on these highly lucrative projects is shrouded in top level political bargaining to which I do not have any access.

Data on accurate network perception, tender officials' network centrality, information acquisition, and winning of the tenders were collected in a two-wave survey that was administrated with the members of TMT of each firm, and tender officials in each organization in charge of the tenders. I gathered the data on network perception and officials' network centrality in June 2010, and four months later a second survey was administered to obtain data on changes of network perception, information acquisition, and winning of the tenders. Similarly to the study of Krackhardt (1990) I compared objective network information that was gathered from organizational leaders with subjective network perception of tender participating firms TMTs.

I used information from Krasnodar region municipalities, internet, and high ranking officials in Krasnodar and Sochi to construct an initial list of 2014 Winter Olympic Games related tender competitions. The search resulted in 31 tenders. I randomly selected eight tender projects that were being held by six different public and private organizations with a total of 65 officials in charge of the tender proceedings. A total of 122 firms were participating in these eight tenders. In order to maximize my response rate I first asked my high level contacts at Krasnodar Krai municipality to conduct phone calls with the organizations that were in charge of the tenders, and explain purpose and importance of the research project. Next I made appointments during which questionnaires were personally administered on-site. Officials in one of the six tender organizers declined

full cooperation, yielding a sample of five tender organizers and 86 tendering firms. Since 15 of the 24 members of one of the five tender organizers declined to cooperate with the second survey, the final study population amounted to four tender organizers and 78 tendering firms. Overall participation rate for tender organizers was 66.6% (i.e. 4/6) and the internal response rate was 63% (i.e. 41/65). The overall participation rate for tendering firms was 63.9% (i.e. 78/122) and the internal response rate was 77.5% (i.e. 196/253). Analyses of non-response in both survey rounds indicated no significance differences between respondents and non-respondents in terms of firm age, firm size, tender size, and tender organizer size. Although the firms were randomly selected for the analysis, I did not include firms that had decided not to participate in the tender competitions. However, given the importance of networking in emerging economies and especially the role of *blat* in the Russian context, I argue that the results will not be biased and can be generalized to the larger context of The Russian Federation, and other emerging economies.

My final sample consisted of 78 tendering companies that were participating in five different tenders. The tenders were of different size and in different industry sectors (1) renovation of an existing research and education institution on environmental issues, 2) improving sections of roads around the city of Sochi, 3) conducting the yearly audit of one of the main organizations that is supervising the development of the Olympic venues, 4) real-estate valuation, and 5) transportation of construction materials), which enabled us to control for industry sector and tender size. Companies that expressed interest to participate in the tenders could apply

within the given time period, which could range from several weeks to months. Any legal body regardless of its organizational form, ownership type, and location can apply. This is in contrast to the strict requirements of “Olimpstroy” where only companies with at least three years of experience in construction and assembly projects with total cost exceeding 500 million rubles (est.\$17 million) can apply. The companies were also evaluated on experience of work execution over the past three years, equipment, having qualified personnel, financial condition, having their own construction and/or electro-technical laboratory, and should not have submitted claims from “Olimpstroy” over the past year. The selection criteria of the proposals are also different from Olimpstroy. Among the selected tenders the evaluation is conducted according to the following five criteria: 1) quality, 2) cost effectiveness, 3) efficiency, 4) available technology, and 5) personnel, in contrast to the lowest cost criteria as the sole selection criteria at Olimpstroy.

I studied the cognitions of the key executive and his or her team of top managers on network structure and content of officials in charge of the tender proceedings. The top executive level is the point, at which strategic information converges, is interpreted, and acted upon (Sutcliffe and Weber, 2005). A total of 196 respondents from the participating companies were personally contacted. I conducted a similar survey among the organizations that were in charge of the tender proceedings in order to reveal the “objective” information on network structure and content of these officials. A total of 41 tender officials in charge of the managing the tenders from the four temporary project groups were contacted. The participating firms

ranged in size from 4 to 76320 employees, and averaged 7041 employees. The age of the firms ranged from 1 to 43 years, with an average age of 14 years.

## 4.5. Measures

### 4.5.1. *Winning of the tenders*

My dependent variable is winning of the tenders. Winners of the tenders were selected and publicly announced by the tender organizers. Twenty-six of the seventy-eight tender participating firms in the five tenders combined were selected as the winners. 78 firms participated in the five tenders. The industry, size, number of participating firms and number of winners of each tender competition are presented in Table 10. Winning of the tenders is a binary variable that is assessed by whether the tender competing firms were selected as winners or not. Companies that had won the tenders were coded as 1, and companies that failed to win the tenders as 0.

**Table 10:**  
**Overview tenders**

<u>Tender Industry</u>	<u>Size (\$)</u>	<u>Firms</u>	<u>N. winners</u>
Construction	19.793.000	11	4
Construction	34.475.000	14	5
Audit	1.254.590	12	4
Real estate valuation	579.359	18	5
Transportation	1.278.579	23	8

#### *4.5.2. Network perception*

I assessed network perception variables with questionnaire items adapted from previous studies (e.g. Laumann, 1976). The questionnaire was translated from English to Russian by two independent native speakers who were also fluent in English. The questionnaire was translated back from Russian to English to control for any possible errors that might have arisen during the translation process. The questionnaire was pilot tested among Russian entrepreneurs and executives residing in The Netherlands. I refined the questionnaire on the basis of the pilot test results. I averaged individual level scores of the respondents to create measures on executive team level. I assessed the intra-class correlation of the perceptual measures, to examine the extent to which responses of the individual respondents within a firm are similar to one another (Shrout and Fleiss, 1979; Kenny and LaVoie, 1985). The average intra-class correlation across the constructs was .86 indicating sizeable agreement among top executive group members in their responses.

I used the roster method to measure the perception accuracy of tender competing firms on tender officials' networks. Network perception accuracy consists of perceived network structure and network content. I assessed perceived network structure by presenting to managers the complete roster of officials and asking them to assess presence or absence of ties between each pair of tender officials. Perceived network content was assessed by asking the managers to indicate the resources (official decision making authority, special expert knowledge of construction industry, good connections with influential persons, general respect as someone who can

mobilize people behind certain proposals, and unique access to key information or resources concerning the tenders) possessed by each of the tender officials.

Actual network data was gathered among tender officials. Using the roster method I asked the tender officials to indicate their mutual social ties and nominate themselves and other officials according to influence and resources that they possess. The average interclass correlation of officials' responses on network structure was .93 and network content .89, indicating strong agreement among responses of officials.

Similarly to the studies of Gower and Legendre, (1986); Krackhardt (1990); and Casciaro (1998) I used the Pearson correlation coefficient between perceived and actual network information in order to calculate perception accuracy. The scores ranged from 0 (indicating no correlation between perceived and actual network information) and 1 (showing a complete agreement between perceived and actual network information). This approach provides an accurate and objective measure of perception accuracy (Casciaro, 1998; Gower and Legendre, 1986; and Krackhardt, 1990).

#### ***4.5.3. Moderator***

The moderators are interaction frequency and tender proposal quality. Interaction with tender officials is operationalized as the interaction between tender competing firms and centrally located officials. I used roster method with the complete list of all of the tender officials and tender participating firms. I assessed the interaction with tender officials by

asking the respondents from competing firms to indicate the frequency of contact with tender officials in the past twelve months ((1) once, (2) few times, (3) once a month, (4) at least once a week) with whom they had regularly exchanged information regarding tender competitions. In order to verify the existence of ties I used locally aggregated structure or LAS (Krackhardt, 1987). LAS implies that actor A and actor B both have to agree that a relation between them exists in order for this relation to be accepted as existing. This measure of relation is therefore direct and has obvious face validity (Krackhardt, 1990).

I assessed the tender proposal quality by asking the tender officials to grade the tender proposals of the participating firms on the following five criteria: 1) quality, 2) cost effectiveness, 3) efficiency, 4) available technology, and 5) personnel ( $\alpha=.78$ ).

#### ***4.5.4. Mediator***

The mediator is information acquisition. I assessed information acquisition with questionnaire items adapted from study of Baron & Tang (2009). I asked the tender competing firms using three 7 point Likert scale questions to indicate whether they were able to access information that was relevant for their tender proposal.

#### ***4.5.5. Control variable***

The control variable is firm size. Larger firms are more likely to enjoy higher negotiation power over their clients and suppliers (Serrasqueiro and Macas Nunes, 2008; Mansfield, 1962; Singh and

Whittington, 1975). Additionally, larger firms face less difficulty in accessing investments, and have a larger pool of human capital (Yang and Chen, 2009). Firm size was calculated as the logarithm of total number of employees.

**Table 11:**  
**Means, standard deviations and correlations**

<i>Variable</i>	<i>Mean</i>	<i>s.d.</i>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>
1. Firm Size	7041.32	20082.88	-0.15	0.07					
2. Tender proposal quality	5.33	0.23	0.01	0.09	0.24*				
3. Interaction frequency	2.8	0.80	-0.00	0.04	0.02	0.14*			
4. Perception (net. Structure)	0.34	0.25	-0.02	0.02	0.07	0.20*	0.13*		
5. Perception (net. Content)	0.34	0.23	-0.04	0.04	0.13*	0.24**	0.11 <sup>†</sup>	0.17*	
6. Information acquisition	13.60	2.19	0.06	0.11	0.17*	0.22**	0.12	0.12*	0.28**
7. Winning of the tenders	0.33	0.47	0.00						
N=78									
*p<.05, **p<.01									

#### **4.6. HLM analysis**

Given the binary nature of the dependent variable and the existence of different levels in data gathering (Raudenbush, Bryk, and Congdon, 2004) I applied hierarchical linear modeling (HLM) in order to test the hypotheses. HLM is generally used in education research and it is suitable for any research whereby the analysis is conducted on different levels. HLM is a multi-level analysis allowing variance in outcome variables to be analyzed at different levels. By using HLM I can control for between-tender variance in winning of the tenders. HLM generates linear model with explanatory variables that account for variations at each level. HLM estimates model coefficients at each level and predicts the random effects associated with each sampling unit at every level. The use of HLM offers two important advantages. First, the mathematics of HLM recognize that lower level members within a higher level system may not be independent from each other. Second, The Bayesian estimation approach of HLM at levels 1 and 2 improves the precision of estimates compared to the traditional approaches (Hofmann, 1997).

**Table 12:**  
**HLM output predicting information acquisition**

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9	Model10
<i>Control variables</i>										
Firm size	.013	.010	.012	.011	.007	.009	.013	.012	.007	.014
<i>Moderators</i>										
Tender proposal quality		.032	.014	.027	.019	.021	.111	.105	.102	.109
Interaction frequency			.121*	.125*	.125*	.121*	.124*	.121*	.127*	.129*
<i>Main effects</i>										
Structural accuracy				.106 <sup>†</sup>	.102 <sup>†</sup>	.108 <sup>†</sup>	.104 <sup>†</sup>	.100 <sup>†</sup>	.098 <sup>†</sup>	.103 <sup>†</sup>
Content accuracy					.137*	.134*	.184*	.181*	.178*	.186*
<i>Interaction effects</i>										
Structural X Content accuracy						.201**	.201**	.193**	.197**	.201**
Structural X T. proposal quality							.019	.026	.037	.023
Structural X Int.frequency								.106*	.111*	.113*
Content X T. proposal quality									.035	.035
Content X Int.frequency										.123*
Pseudo R <sup>2</sup>	.08	.10	.13	.15	.19	.23	.27	.29	.30	.32

In the first phase of HLM analysis I need to estimate a model without any firm level variables, a so called null model. This model is equivalent to one-way ANOVA with random effects, and estimates variances in the outcome variable at the firm level (Bryk & Raudenbush, 1992, pp.17). The next step in the analysis includes adding the firm level control variable (Table 12). In the full sample, the control variable was not significant at .05 level. The remainder of the HLM analysis involved testing a series of models that introduced different classes of firm-level variables sequentially to examine their effects on information acquisition. Models 4 and 5 examined the perception accuracy of officials' network structure (hypothesis-5a), and the effects of perception accuracy on officials' network content (hypothesis-5b). Models 6 to 10 examined the interaction effect of perception accuracy of officials' network structure and content (hypothesis-5c), and interaction effects between network structure/content accuracy and the moderators (hypotheses 2 to 3). Finally, to test the mediating role of information acquisition (hypothesis-4) and the direct relation between network perception accuracy and winning of the tenders (hypotheses 1a, b, and, c) I conducted moderated mediation analysis (Table 13, Model 11). At each stage of the analysis all of the variables were retained, and then the model was re-estimated.

**Table 13:**

**Mediation analysis predicting winning of the tenders**

	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9	Model10	Model11	N=78.
<i>Control variables</i>												Unstan
Firm size	.009	.011	.012	.009	.014	.011	.019	.031	.019	.021	.011	dardiz
<i>Moderators</i>												ed
Tender proposal quality		.149*	.141*	.144*	.138*	.142*	.147*	.139*	.141*	.145*	.122*	estima
Interaction frequency			.131*	.145*	.139*	.142*	.13*	.141*	.137*	.139*	.098	tes
<i>Main effects</i>												(based
Structural accuracy				.098	.099	.097	.102 <sup>†</sup>	.103 <sup>†</sup>	.104 <sup>†</sup>	.107 <sup>†</sup>	.062	on
Content accuracy					.136*	.141*	.141*	.137*	.139*	.144*	.096 <sup>†</sup>	grand-
<i>Interaction effects</i>												mean
Structural X Content accuracy						.159*	.166*	.177*	.171*	.180*	.101 <sup>†</sup>	centeri
Structural X T. proposal quality							.144*	.152*	.139*	.154*	.126*	ng) are
Structural X Int. frequency								.072	.077	.069	.075	report
Content X T. proposal quality									.198*	.201*	.167*	ed.
Content X Int.frequency										.176*	.112*	Pseud
<i>Mediator</i>												o R <sup>2</sup>
Information acquisition											.312**	values
Pseudo R <sup>2</sup>	.11	.17	.20	.22	.23	.24	.25	.26	.29	.31	.37	estima
												te the

amount of total variance in the dependent variable captured by predictors in the model.

<sup>†</sup>  $p < .10$ , \*  $p < .05$ , \*\*  $p < .01$  Two tailed test.

## 4.7. Results

Table 11 provides means, standard deviations and zero order-correlations among the variables used in the analyses. Table 12 summarizes the results of HLM analyses for Hypotheses 1–5. Control variable firm age is included in all analyses. I first tested whether accurate perception of officials' network structure (Hypothesis-5a) and network content (Hypothesis-5b) positively related to information acquisition. As shown in model 4 and 5 perception of network structure ( $b=.106$ ,  $p<.10$ ), and network content ( $b=.137$ ,  $p<.05$ ) are both positively related to information acquisition. However, only the perception of network content is significant at 5% level. The results thus reject hypothesis 5a and, support hypothesis 5b. Network structure and network content perception accounted for 2 and respectively 4 percent of additional variance in information acquisition. Further, as shown in model 6, the interaction effect between officials' network structure perception and network content perception on information acquisition ( $b=.201$ ,  $p<.01$ ) is statistically significant and positive, supporting hypothesis 5c. The interaction accounted for 4 percent additional variance in information acquisition.

Next, I tested the moderating roles of interaction frequency (hypotheses 2a and 2b), and tender proposal quality (hypothesis 3).

Models 8 and 10 show that interaction effect between accurate perception of network structure and interaction frequency ( $b=.111$ ,  $p<.05$ ) and accurate perception of network content and interaction frequency ( $b=.132$ ,  $p<.05$ ) were positively and significantly related to information acquisition. The results support hypotheses 2a and 2b.

The interaction effects (Model 7 and Model 9) between accurate perception of network structure and tender proposal quality ( $b=.024$ ,  $p>.05$ ) and accurate perception of network content and tender proposal quality ( $b=.032$ ,  $p>.05$ ) were not significantly related to information acquisition. The results reject hypothesis 3.

Finally, I tested the mediating effect of information acquisition. According to Baron and Kenny (1986) the following three conditions need to be met in order to establish mediation: 1) significant relation between independent variable and the mediator, 2) significant relation between the mediator and the dependent variable, and 3) mediator fully (full mediation) or

partially (partial mediation) reduces the effects between independent and dependent variables. Furthermore, the relation between independent variables and mediator, or the mediator and dependent variable should be moderated (Muller, Judd, and Yzerbyt, 2005).

The results of hypotheses show that the relation between main effects (hypotheses 5a, 5b, and 5c) and information acquisition, and between the moderators (hypotheses 2, and 3) and information acquisition are positive and significant. As such, the first condition of mediation is met. The second condition of mediation is also supported by the significant positive relation between information acquisition and winning of the tenders (Model 11 in Table 13,  $b=.312$ ,  $p<.01$ ). Model 11 in Table 13 further indicates that the positive effect of accurate network perception and winning of tenders were no longer statistically significant after information acquisition was controlled for ( $b=.144$ ,  $p<.05$  versus  $b=.096$ ,  $p>.10$ ). All three conditions of mediation were met. The results thus confirm a full mediating role of information acquisition (hypothesis 4 supported) and reject direct positive relation between network perception and winning of the tenders (hypotheses 1a, 1b, and 1c rejected).

#### **4.8. Discussion**

Social networks have proven to have significant performance implications (e.g. Adler & Kwon, 2002; Burt, 1992; Coleman, 1990; Hansen, 1995; Granovetter, 1973) yet, the problem of endogeneity, and the development and evolution of social networks remain largely unanswered, (Stuart & Sorenson, 2007). Furthermore, in managerial cognition literature the performance effects of managerial intra-organizational network perception, and environmental perception has been extensively studied. However, little is known on the performance effects of managerial inter-organizational network perception (Mcnamara, Deephouse, & Luce 2003; McNamara, Luce & Thompson, 2002). In this study, I sought to consolidate social network and managerial cognition literatures by conducting an empirical study on the managers' perception of external networks and their performance effects. I conduct my study in the context of temporary project networks in the setting of the 2014 Winter Olympic Games tenders. I analyzed 78 firms that were participating in 5 different tenders, which were held by 4 separate organizations. The analysis revealed that: 1) managerial network cognition does matter.

Accurate perception of officials' network content and structure are strongly (indirectly) related to winning of the tenders; 2) firms that had frequent interaction with key tender officials were more successful in acquiring key tender related information; and 4) information acquisition mediated the network perception-tender winning link.

In studying the role of network perception, I found that accurate perception is significantly related to performance. Accurate perception enables the managers to contact the key organizational leaders that have the required knowledge and contacts. As such, accurate network perception can be used to tackle cognitive imbalance of the actors and enable them to more fully exploit the potential benefits of the networks. This study also contributes to recent study on the role of agency on network development (e.g., Baker & Nelson, 2005; Lounsbury & Glynn, 2001; Vissa & Bhagavatula; 2012). It does so by indicating that accurate network perception will enable the selection of the actors that have the required ties or resources, thus improving network search and freeing more time and resources to form ties with these actors. Hallen & Eisenhardt (2012) argue that existing network literature lacks an in-depth account of how firms form ties efficiently, and although tie formation is relevant, tie formation efficiency is a more precise conceptualization of the source of high-performance network outcomes. My study shows that having an accurate network perception can indirectly improve the efficiency of tie formation.

The results also indicate that managers of tender participating companies believed that having particular relations with key tender officials would enhance their odds of winning the tenders. Therefore, they engaged in strategic networking in order to come in contact with organizational leaders that hold valuable positions and information. The findings on the significant relation between inter-organizational network perception and performance contribute to the discussion regarding the endogeneity problem (Stuart & Sorenson, 2007). The findings show that networks are affected by certain endogenous attributes, and are thus not purely exogenous. Moreover, the unique setting of 2014 Winter Olympic Games tender competitions enabled us to study the creation and evolution of social networks. Doing so, this study addressed the observation of Stuart & Sorenson (2007) that there is very little systematic knowledge on how strategic actors construct their networks.

Surprisingly, I found that perception of network structure alone was not significantly related to information acquisition. Rather, the results show that accurate perception of network content alone or the accurate perception of network content and structure combined can be useful for information acquisition. This result is interesting, because it indicates that perception of network content is more valuable than the perception of network structure. This suggests that from structuralist and connectionist streams of social capital (Borgatti and Foster, 2003) research, the connectionist argument is more important in the context of the Olympic tenders. Doing so, this study addressed the observation of Ferriani, Fonti & Corrado (2013) that more research is needed to understand the role that tie content plays in the emergence of different types of ties between organizations. The results also show that the interaction effect of accurate perception on network content and structure is greater than their individual effects, indicating that effective network search requires knowing both who knows who and who knows what.

The findings suggest that accurate perception is positively related to information acquisition. However, having frequent interaction with key organizational leaders can strongly improve access to information. That is, it is not only important to know who knows who and who knows what, it is also necessary to have frequent interaction with these people in order to gain access to the required information. This finding supports the notion that embedded ties tend to better and more often facilitate transfer of sensitive and valuable knowledge (Hansen, 1995).

The moderating role of initial tender proposal quality and information acquisition was not supported. This could indicate that the information that is acquired of tender officials is of such importance that it can be used to significantly improve initial tender proposals, despite their quality.

The lack of significant direct relation between network perception and winning of the tenders is surprising. However, given the strong and significant mediating relation between information acquisition and winning of the tenders the lack of direct relation between network perception and winning of the tenders is understandable. Most of the studies in managerial cognition literature find a significant and positive relation between network perception and performance. Yet, few of the studies explain how exactly network perception translates into

performance. In this study the information acquisition is the link between accurate network perception and winning of the tenders. It explains how perception accuracy can influence firm performance. Doing so it contributes managerial cognition literature and extends our knowledge on the relation between network perception and firm performance.

#### **4.9. Limitations**

The first limitation of my study is its unique setting. The Olympic Game tenders are a unique temporary project based setting. The networks in such a setting are temporary and tend to develop and dissolve parallel to the duration of the project. However, the results can be easily generalized to settings with in-transparent, dynamic and temporary networks. Second limitation is related to the boundary condition. My study does not answer when are accurate network perceptions more important and when do they matter less? And what are the individual, firm and network contingencies? Finally, further research is needed to understand the antecedents and dynamics of managerial perception. Why do some managers have more accurate perception than others? And how do these perceptions change?

#### **4.10. Practical implications**

Despite some limitations, this research provides important practical implications. The results indicate that accurate managerial perception facilitates the winning of tenders. Thus, supporting the value of accurate inter-organizational network perception. The benefits of accurate perception can especially be important to firms that enter tender type competitions with a relative disadvantage compared to their competitors. Yet, the findings also show that frequent interaction can further facilitate the benefits of accurate network perception. Thus, it is beneficial for firms to allocate time and resources to keep up information on the changing environment and engage in active networking with key players and competitors.