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Social Networks and Firm Performance:

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2014

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citation for published version (APA)

Arzlanian, S. (2014). *Social Networks and Firm Performance: Examining the Relation between Dimensions of Social Capital, Social Network Perception and Firm Performance*. ABRI.

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Chapter 6

DISCUSSION AND CONCLUSION

6.1. Introduction

This dissertation aimed to contribute a better understanding of how social networks and accurate perceptions of inter-organizational networks influence firm performance.

The analysis of the existing literature revealed the following: 1) Conflicting perspectives exist regarding the specific network properties that constitute social capital. Disagreement persists about the relative value of sparse and cohesive network structures (Batjargal, 2010), weak and strong ties (Patel and Terjesen, 2011), and diverse versus homogeneous networks (Renzulli et al., 2000). The dimensions of entrepreneurs' social capital that enhance firm performance thus remain understudied. 2) Although researchers have begun to probe the generalizability of network effects (Burt, 2000), it remains unclear what contextual contingencies might condition the value of entrepreneurs' social capital. 3) Furthermore, while most of the research on social networks has been conducted regarding the impact of networks, the ways in which social networks are created and evolve remain largely unknown (Borgatti and Foster, 2003). Thus, there is little information in the literature regarding how entrepreneurs can develop favorable network positions (Elfring & Hulsink, 20017; Hoang & Antoncic, 2003). Considering that perception is often biased (Kilduff et al., 2008; Krackhardt, 1987; Casciaro, 1998) and that misperceptions can be costly (Krackhardt, 1990; Burt & Ronchi, 1990), research on managerial inter-organizational perception can contribute to a better understanding of the antecedents and

underlying mechanisms of social networks. 4) Despite extensive research on the factors that influence managerial perceptions (e.g., Aldrich & Kim, 2007; Singh, Hansen, & Podolny, 2010; Stuart & Sorenson, 2001), there is little understanding of what factors influence the accurate managerial perception of the environment and how these factors exert this influence (Sutcliffe, 1994; Sutcliffe et al., 2005; Henneberg, et al., 2010).

In sum, there is little empirical evidence regarding the relationship between firm performance and managers' use of networks. There is considerable confusion and disagreement concerning the relationship between particular network characteristics and the performance of emerging firms. The conditions and contingencies under which networking contributes to business effectiveness is unclear, and there is little information in the literature about the ways in which entrepreneurs can develop favorable network positions. I examined these issues in the four studies contained in this dissertation. In this final chapter, the main findings of the four studies will be discussed. I first address how the results of the two meta-analyses and two empirical papers contribute to a better understanding of the relationship between different dimensions of social capital and performance, the effects of managerial network cognition, and the antecedents of cognition. Then, I discuss the managerial implications of the findings. Finally, I end this chapter by discussing the main limitations of the dissertation and identifying potential avenues and directions for future research.

6.2. Main research findings

In Table 17, the main findings are contrasted with the intended contributions of this dissertation (see Section 1.5).

TABLE 17:
Summary of the main findings, organized by contribution

Contribution	Main Findings
<p>1. Extending prior narrative reviews by providing systematic quantitative evidence of the relative importance of social capital to new venture performance</p>	<ul style="list-style-type: none"> • Human capital and social capital are both positively related to new venture performance. (Study 1) • Overall, the relationship between social capital and new venture performance is stronger than the relationship between human capital and new venture performance. This is especially the case in emerging economies. (Study 1)
<p>2. Reconciling some of the mixed findings noted in prior literature reviews on social capital</p>	<ul style="list-style-type: none"> • Bridging properties of entrepreneurs' personal networks, particularly access to structural holes and diverse contacts, have the greatest positive effect size. (Study 2) • Network effects are contingent on the developmental stage of new ventures, their industrial and institutional contexts, and the type of performance measure considered. (Studies 1 and 2) • Strong ties and network diversity are more strongly related to performance for younger ventures than for older firms. Younger ventures relatively benefit more from network diversity. (Study 2) • There are few significant differences in the effects of social capital on performance between high and low-technology industries. Strong ties and weak ties are much more strongly related to performance in high-technology industries as subsequent responses to external industry conditions. (Study 2) • The results indicate that whereas structural holes and network diversity have relatively greater positive effect sizes for ventures in established economies, strong ties were more strongly related to performance for firms in developing economies. (Study 2)

<p>3. Examining the effects of managerial perceptions of inter-organizational networks perception effects on firm performance</p>	<ul style="list-style-type: none"> • Accurate perception is significantly related to performance. Accurate network perception can be used to tackle cognitive imbalances between actors and enable them to more fully exploit the potential benefits of networks. (Study 3) • Information acquisition mediates the relationship between network perception and the likelihood of winning tenders. (Study 3) • Accurate network maps on the individual level are beneficial, and misperceptions can be costly. (Study 3) • The perception of network structure alone is 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. (Study 3) • The interaction effect of accurate perception on network content and structure is greater than the individual effects of network content and structure, indicating that effective network searches require knowing who knows who and who knows what. (Study 3) • The interaction frequency with key tender officials produces a moderating effect on the relationship between network perception and information acquisition. (Study 3)
<p>4. Examining different factors that influence managerial environmental perception</p>	<ul style="list-style-type: none"> • Participation in tender-related events and having a central network position improve perception accuracy. (Study 4) • The relationships between event participation and perception accuracy and between network centrality and perception accuracy are stronger for managers who frequently interact with key organizational leaders. (Study 4)

- Positive changes in perception accuracy are observed among managers that participate in tender-related events and have central network positions. (Study 4)
- Positive changes in perception accuracy are greater among managers that frequently interact with key organizational leaders and have prior experience in tender competitions. (Study 4)

6.3. Contributions and theoretical implications

In this section, I discuss the key findings and contributions of the four chapters and explore broader theoretical implications of these studies.

Contributions 1 and 2: Providing systematic quantitative evidence of the relative importance of social capital to new venture performance

Human capital and Social capital

Human capital and social capital are two key resources that the TMT contributes to a new venture (Li and Zhang, 2007). The elements of managers' human capital, such as skills and experience, influence decisions regarding the strategy of the venture (Cooper & Bruno, 1977; Feeser & Willard, 1989) and are the source of expertise (Eisenhardt and Schoonhoven, 1990; Roure & Keeley, 1990), while social capital embodied in the network ties of the TMT can provide access to valuable external resources and information (Granovetter, 1985; Li and Zhang, 2007; Luo, 2003; Stuart and Sorenson, 2007). Thus, prior research has portrayed the human capital and social capital of a venture's TMT as key antecedents of new venture performance. Although a large body of research has been conducted on the influence of human capital and social capital on new venture performance, it remains unclear how these two resources compare with one another in their relationships with new venture performance. Furthermore, empirical evidence on the performance benefits of entrepreneurial networks appear unconvincing (Watson, 2007).

By conducting a meta-analysis to compare the overall effects of social capital on new venture performance with those of human capital on new venture performance, I provide systematic quantitative evidence in support of the effects of social capital. The findings in Chapter 2 revealed that on average, human capital and social capital are both positively related to new venture performance, confirming the findings in prior literature that have argued that these forms of capital are key resources for entrepreneurial firms.

However, these results are also surprising. The effect sizes observed between social capital and new venture performance are substantially greater than the effect sizes observed between human capital and new venture performance, and this difference is even greater in

emerging economies. These findings support the performance benefits of social capital and indicate that social capital may even be of greater value to firm performance than human capital. The differential effects of context also suggest that trust is perhaps more important than prior experience or education in emerging economies and enables the effective extraction of value from networks.

Dimensions of social capital

The findings in Chapter 2 warrant a closer examination of the relationship between social capital and performance. Despite the surge of studies examining the role of social capital in the entrepreneurial process, little agreement exists about which properties of entrepreneurs' personal networks enhance the performance of small firms. To help reconcile this debate, this meta-analysis synthesized the cumulative research findings and identified new moderators. The analysis of 61 independent samples revealed a positive overall relationship between social capital and small firm performance ($r_c=.211$). This finding is important because it suggests that although entrepreneurs must invest substantial resources to cultivate their networks, social capital creates significant value for small firms. Although some researchers have questioned the strength of the empirical evidence to date, the observed effect sizes for social capital are comparable to those of personality traits (Zhao et al., 2010) and substantially greater than the impact of human capital on performance (Unger et al., 2011).

In comparing the relative influence of different dimensions of social capital, this study found that weak ties, structural holes and network diversity are all positively related to performance. On the one hand, these results contribute to recent debates about the value of bridging and bonding forms of social capital (Adler and Kwon, 2002) by revealing that, on average, the former seems relatively more valuable in the small firm context. Despite the coordination advantages of cohesive networks (Obstfeld, 2005), it appears that the novelty benefits associated with bridging social capital are more critical for entrepreneurs (Burt, 1992). On the other hand, the findings of this study suggest that not all bridging properties of entrepreneurs' personal networks have the same performance implications. This analysis found that effect sizes of weak ties were significantly smaller than those of structural holes, while network diversity had the

strongest positive relationship with small firm performance. This result suggests that the current focus on relational and structural network properties in extant literature must be complemented with research that directly considers the quality of resources held by entrepreneurs' network contacts and the mechanisms through which they can be accessed and leveraged.

In addition to synthesizing cumulative findings on the link between different social capital dimensions and small firm performance, this study also examined the moderators that might influence these relationships. These results suggest that the optimal configuration of entrepreneurs' social capital changes over time as small firms grow older and differs for firms operating in different contexts. Therefore, rather than continuing to pit different dimensions of social capital in a "horse race" to see which is most beneficial, it appears more productive for future research to further develop a contingency theory of social capital in the small firm context. Although this theory is currently emerging (Martinez and Aldrich, 2011), most empirical studies to date have focused on the main effects of certain network properties. This study found, however, that each dimension of social capital may interact differently with different moderators, indicating that researchers will benefit from testing more integrative models that include multiple network and contingency variables.

Implications of theoretical moderators

In support of recent contentions that the network requirements of small firms might change over time (Martinez and Aldrich, 2011), the meta-analysis in this study revealed that structural holes in entrepreneurs' personal networks are more valuable for new firms than for old firms. The results also indicated that strong ties are more beneficial for older firms. The findings of this study also revealed differences in the effects of social capital on performance across industries. These results are significant because past research has mostly employed single industry samples or treated industry as a control variable. This study found that structural holes and network diversity have a stronger positive relationship with small firm performance in high-technology industries, suggesting that the bridging dimensions of social capital are especially valuable in promoting the adaptability of small firms in uncertain environments in which knowledge is

widely dispersed and rapidly evolving (Rowley et al., 2000). A key implication of this finding is that future research will benefit from documenting the actual process by which networking influences entrepreneurs' alertness to environmental changes and their ability to respond to these changes. If social capital indeed serves to align small firms with their industry context, then future studies must also examine why some entrepreneurs are able to reconfigure their personal networks to fit changing industry conditions while others experience "network inertia" (Kim et al., 2006).

The meta-analysis in this study also exposed that the relationship between social capital and performance differs depending on whether small firms operate in emerging or established economies, finding that while weak ties and network diversity have a stronger positive association with performance in established economies, strong ties are more beneficial in emerging economies. Given the limited comparative research conducted to date (Batjargal, 2010), these results are insightful because they illuminate how entrepreneurs in different institutional environments may need to configure their personal networks differently to achieve higher performance.

Implications of methodological moderators

The analysis of methodological moderators produced several key insights. Effect sizes were found to be somewhat stronger in cross-sectional studies, although the difference was not statistically significant. Regarding the measurement of small firm performance, this study found that self-reported and archival measures produced similar effect sizes. This analysis also indicated that the link between social capital and performance is stronger for measures of nonfinancial performance than for growth or profit measures. This result suggests that if studies only consider small firms' financial performance and disregard their operational effectiveness, they may risk understating the true value of entrepreneurs' social capital.

Contribution 3: Examining the performance effects of managerial inter-organizational network perception

The results of the two meta-analyses show a positive and significant relation between different dimensions of social capital and firm performance. Although these findings improve our understanding of the relation between social networks and performance, they do not explain much about the antecedents of social networks. Furthermore, despite the significant performance implications of social networks (e.g., Adler & Kwon, 2002; Burt, 1992; Coleman, 1990; Hansen, 1995; Granovetter, 1973), the full potential of social networks is seldom utilized (Kim and Aldrich, 2005) because individuals are often faced with bounded rationality. Cognitive limitations force individuals to rely on safe and familiar networks rather than pursuing the potential benefits of a more diverse network. Recent studies (e.g., Borgatti & Cross, 2003) suggest that successful information seeking depends on knowing which resources an actor possesses, being able to accurately evaluate these resources, and being able to gain timely and cost effective access to that actor. Arguably one of the key aspects in forming and fully exploiting a social network is accurate knowledge of the structure of the network and the actors within the network. Engaging in strategic networking activities without knowing who knows who and who knows what within a network might end up being a time consuming and fruitless effort.

In the study in Chapter 4, I sought to address these issues by conducting an empirical study of managers' perceptions of external networks and their performance effects. I conducted this study in the context of temporary project networks in the setting of the 2014 Winter Olympic Games tender competitions. I analyzed 78 firms that participated in 5 different tenders, which were held by 4 separate organizations. The analysis revealed the following: 1) Managerial network cognition had a significant influence on the likelihood of winning tenders. In particular, the accurate perception of the content and structure of officials' networks was strongly related to the likelihood of winning tenders; 2) Firms that had frequent interaction with key tender officials were more successful in acquiring key tender-related information; and 3) information acquisition mediated the relationship between network perception and the likelihood of winning tenders.

Accurate perception and performance

In studying the role of network perception, I found that accurate perception is significantly and positively related to firm performance, which is not surprising. However, the ways in which accurate network perception improves performance is relatively unknown. I found that accurate perception enables managers to contact the key organizational leaders that have the required knowledge and contacts. As such, accurate network perception can be used to tackle the cognitive imbalance of actors and enable them to more fully exploit the potential benefits of their networks. Further research on the exact relationship between accurate network perception and performance can provide a more in-depth understanding of the importance of network perception in different settings and its relationship with different outcome measures.

Type of perception accuracy

I also found that the perception of network structures alone was not significantly related to information acquisition. Rather, the results show that the accurate perception of network content alone or the accurate perception of network content and structure combined can be useful for information acquisition. This finding is interesting because it indicates that perception of network content is more valuable than the perception of network structure. This result suggests that from structuralist and connectionist streams of social capital (Borgatti and Foster, 2003) research, the connectionist argument is more relevant in the context of the Olympic tenders studied here.

However, the results also show that the interaction effect of accurate perception on network content and structure is greater than the individual effects of network content and structure, indicating that an effective network search requires knowing who knows who and who knows what. The findings in Chapter 4 are in line with past studies on cognition in intra-organizational networks arguing that accurate network maps on an individual level are beneficial, and misperceptions can be costly (Krackhardt, 1990; Burt & Ronchi, 1990). The indirect relationship between network perception accuracy and the likelihood of winning tenders contributes to the past research on intra-organizational cognitive networks that found positive significant relationships between network accuracy and various outcome variables (Ancona, 1990; Ancona & Caldwell, 1992; Krackhardt & Hanson, 1993). This study also indicates

the moderating effect of interaction frequency with key tender officials on the relationship between network perception and information acquisition. This finding supports the notion that embedded ties tend to better and more often facilitate a transfer of sensitive and valuable knowledge (Hansen, 1995). Finally, these results also indicate that information acquisition mediates the relationship between network perception and the likelihood of winning tenders. This finding is important because it extends the network cognition literature by revealing how managerial cognition influences firm performance.

Although much research on managerial cognition has focused on the relationship between managerial cognition and outcome variables, few studies have examined the mechanisms through which managerial cognition influences firm performance. The study in Chapter 4 exposes some of the mechanisms that translate accurate managerial cognition into firm performance in the unique setting of the 2014 Winter Olympic Games tender competitions.

Contribution 4: Examining the factors that influence managerial network cognition

The meta-analyses in Chapter 2 and Chapter 3 revealed that different dimensions of social capital are strongly related to firm performance. The findings of the empirical study in Chapter 4 revealed that accurate inter-organizational network perception is significantly related to performance and that misrepresentation can be costly. This finding raises a complementary question regarding the factors that influence managerial perception of inter-organizational networks (Henneberg, et al., 2010; Sutcliffe, 1994). Examining the antecedents of network perception is important because a biased perception can limit managers from engaging in strategic networking and fully mobilizing the resources that are available through their network ties. In the empirical study in Chapter 5, I examined the antecedents of accurate network perception, focusing on how participating in industry events and having a central network position impact inter-organizational network perception accuracy in the context of the 2014 Winter Olympic Games tender competitions.

Antecedents of perception accuracy

Although previous studies have established the value of inter-organizational network perception (e.g., Porac, Thomas, and Baden-Fuller, 1989), few have addressed the factors that

influence managerial perception of inter-organizational networks (Henneberg, et al., 2010; Sutcliffe, 1994). The empirical results of this study reveal that 1) participation in tender-related events and having a central network position improved perception accuracy; 2) the relationship between event participation and perception accuracy and the relationship between network centrality and perception accuracy was stronger for managers who frequently interacted with key organizational leaders; 3) positive changes in perception accuracy were observed among managers that participated in tender-related events and had central network positions; and 4) positive changes in perception accuracy were greater among managers that frequently interacted with key organizational leaders and had prior experience in tender competitions.

Environmental scanning

These results on the positive relationship between event participation and perception accuracy and the positive relationship between network centrality and perception accuracy show that different forms of environmental scanning are positively related to improving perception accuracy. As such, they provide further support of the important role of environmental scanning in the improvement of perception accuracy (Daft, Sormunen, & Parks, 1988; Hambrick, 1982; Sutcliffe, 1994).

The positive relationship between network centrality and perception accuracy provides further support of network theory and especially of network centrality that enables the accurate identification of key network actors (Singh, Hansen, and Podolny, 2010; Stuart, & Sorenson, 2001). Further research can provide more information on how exactly event participation and network centrality improve perception accuracy.

Prior experience

Interestingly, the role of past tender experience was not positively related to perception accuracy in the static model. This finding suggests the notion that cognitive shortcuts are often used to interpret available information, which can often lead to inaccuracies (Calori, Johnson, & Sarnin, 1992). Managers with prior tender experience might have already had predetermined cognitive pictures that were not necessarily accurate. However, past tender experience was

positively and significantly related to an improvement of perception accuracy over time, suggesting that prior experience combined with environmental scanning enables managers to quickly interpret the available information and adjust their cognitive maps. This finding also shows that only studying static effects may paint an incomplete picture. To more fully understand the relationship between different variables and perception accuracy, it is necessary to conduct a longitudinal study.

Interaction frequency

The observed positive main effects and interactive effects of interaction frequency suggest that frequent interaction with key tender officials improved both the access to new information as well as the interpretation of the available information. Furthermore, these findings support the suggestion of Hite and Hesterly (2001) that interaction frequency and trust between exchange partners is key in facilitating resource acquisition that is often surrounded by high uncertainty. The longitudinal findings further support the roles of event participation and network centrality in inter-organizational perception accuracy.

These findings are important for three reasons. First, the findings extend the understanding of managerial inter-organizational perception by extending the work in the managerial and organizational cognition literature. Second, the findings also contribute to the social network literature by providing more insight into the antecedents of social capital. Finally, the unique setting and longitudinal character of this research enabled the study of the changes in inter-organizational network perceptions.

6.4. Managerial implications

The findings from the two meta-analyses reveal that network effects are contingent on the development stage of new ventures, their industry and institutional contexts, and on the type of performance measures considered. This information can be used by managers to create the most effective match between network dimensions, firm age, industry, institutional setting and

desired performance. Having the most effective match will enable these managers to fully exploit the benefits of their social networks. However, it is first necessary to create useful social networks. As the results from the empirical study in Chapter 4 indicate, an accurate network perception is essential for effective networking. The findings of the empirical study in Chapter 5 indicate that environmental scanning in the form of event participation and central network position improves the accuracy of the perception of inter-organizational networks. As such, in order to fully exploit the benefits of social networks, it is important for managers to first have an accurate network perception by continuously scanning the environment. They can then use their accurate perceptions to engage in networking activities with key actors. Finally, they can adjust their networking activities according to the contingencies of their firm.

6.5. Limitations and future research directions

Because the specific limitations of the individual studies have already been discussed in the preceding sections, the focus of this section will be the communal limitations and corresponding future research suggestions.

First, the findings of this dissertation on the relationship between social capital and performance are limited to surviving firms because most primary studies examined in the two meta-analyses did not consider failed ventures. Considering survivor bias is critical because the network embeddedness of entrepreneurs may influence both their willingness and ability to exit their ventures. For instance, entrepreneurs who bridge structural holes in social networks may have lower performance thresholds (Gimeno et al., 1997) because actors in brokerage positions perceive greater levels of autonomy and have access to more alternative business opportunities (Burt, 1992). Future research is encouraged to study how entrepreneurial networks influence the likelihood of business failure and the specific mechanisms involved.

Second, the findings of this study do not reveal the specific mechanisms responsible for the observed relationships. To unearth these mechanisms, additional research that empirically captures potential mediating variables at different levels of analysis is needed. At the individual level, entrepreneurial networks may importantly shape the cognitions, motivations, goals, and decision-making of entrepreneurs (De Carolis et al., 2009). At the firm level, entrepreneurs'

network embeddedness could exert its effects by molding the business models, resource portfolios, and strategic orientations of their ventures (Batjargal, 2010). I therefore invite future researchers to examine these factors and other potential indirect network effects with greater consideration of intervening processes (Slotte-Kock and Coviello, 2010).

Third, the Olympic Games tender competitions create a unique and 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. Therefore, the results of this study might not be easily generalized to other networks, such as perceptions of strategic alliances or board interlocks. Future research in different, more “traditional” settings is encouraged.

Fourth, the data employed in the empirical studies may suffer from sample selection. Although I randomly selected tenders, I did not include companies that were not participating in tender competitions. The data therefore is not fully representative of all of companies. Furthermore, the findings do not explain when accurate network perceptions are more or less important or what individual, firm and network contingencies are involved.

6.6. Conclusion

This study began by noting that despite growing interest in the role of social networks in firm performance, there is some confusion in the literature regarding the antecedents of social capital and the mechanisms of how and when social capital influences firm performance. The current study contributes to the existing literature by examining how and when social capital influences firm performance and the consequences and antecedents of managerial network perception. The related hypotheses were tested with meta-analyses and empirical studies in the unique context of the 2014 Winter Olympic Games tender competitions. The results revealed that social capital is strongly related to firm performance. However, these network effects are contingent on the development stage of new ventures, their industry and institutional contexts, and the type of performance measures considered. Furthermore, the results reveal that the accurate perception of networks is important, and misperception can be costly. Perception accuracy can be improved by actively scanning the environment and frequently interacting with key actors within the network.