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The effectiveness of cohesive and diversified networks: A meta-analysis

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ABSTRACT

The entrepreneurship literature recognizes the substantial contributions of networks to firm performance. However, the circumstances under which cohesive versus diversified networks drive firm performance remain unclear. To rectify this situation, the present meta-analysis integrates the results of 68 independent samples ($N = 16,364$). The findings indicate both cohesive and diversified networks relate to performance ($r_c = .164$ and $r_d = .182$). Moderator analyses suggest that diversified networks are particularly effective for large firms, firms competing in innovative industries and in well-developed financial markets. Cohesive networks relate to performance in small firms but not in large firms. These findings suggest that the relationship between networks and performance is context-dependent.

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1. Introduction

The search for predictors of firm performance has a long tradition in the entrepreneurship literature. Beginning in the early 1990s, more and more researchers recognize that entrepreneurs and their firms are embedded in social and exchange relationships with their environment (Hoang & Antoncic, 2003). Such relationships are of strategic significance, enabling firms to successfully exploit opportunities (Elfring & Hulsink, 2007; Granovetter, 1985). Research examines the relationship between network characteristics and entrepreneurial outcomes, such as venture performance (Hoang & Antoncic, 2003). A meta-analysis by Stam, Arzlanian and Elfring (2014) indicates that the overall relationship between network properties and performance is positive and significant ($r = .211$). Thus, meta-analytic evidence confirms the high importance of networks in the entrepreneurial process. The meta-analysis stresses the importance of different network characteristics, such as network size, density, diversity, strong ties and weak ties. Additionally, the results of the meta-analysis by Stam et al. (2014) indicate that the network-performance link is likely to be context-dependent. Thus, applying contingency frameworks when studying this link could provide new insights and advance the academic literature. However, the literature currently leaves many questions unanswered; this context motivates the present study and the resulting additional meta-analytic review of the vast empirical literature on this topic.

While the meta-analysis by Stam et al. (2014) examines different network characteristics that reflect different theoretical perspectives, the study does not make an attempt to integrate the literature by providing a consistent and theoretically-justified framework to classify network characteristics. The literature suggest a number of frameworks to categorize networks (Hoang & Antoncic, 2003; Nahapiet & Ghoshal, 1998). One of the most prominent distinctions differentiates between the entire structure of relationships (Aldrich & Zimmer, 1986) and the quality of relationships people have developed with each other (Batjargal, 2003; Granovetter, 1992; Moran, 2005). However, this distinction is problematic because structural and relational features of networks are not independently defined: rather, they are overlapping. Another categorization refers to network cohesiveness and diversity (Martinez and Aldrich, 2011). This distinction is useful in the context of entrepreneurship because cohesive and diversified networks provide different resource advantages for entrepreneurs and their firms. Additionally, there is no overlap between the two categories as in the case of structural versus relational approaches. Hence, the categorization is more clear-cut. Furthermore, entrepreneurs and managers need to decide the extent to which they invest their limited resources in a cohesive or a diversified network.

Second, cohesive and diversified networks have advantages and disadvantages which could influence the net benefits in specific situations. This suggests that there are moderator variables involved in the relationship between network characteristics and performance. For example, the disadvantages of cohesive networks include the risk of over-embeddedness (Uzzi, 1996), lock in (Johannisson, 2000) and reduced heterogeneity (Westlund & Adam, 2010). All of these disadvantages

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may limit the benefits of cohesive networks for firms that rely on a large variety of resources, as in the case of firms in innovative industries, for example. Therefore, a contingency framework is useful for examining the circumstances under which cohesive and diversified networks relate to performance. A debate in the network literature is ongoing about the extent to which the relationship between networks and performance is generalizable. While most studies in the networking literature conceptualize a direct relationship between networks and performance (Batjargal, 2003; Collins & Clark, 2003; Davidsson & Honig, 2003), other conceptualizations challenge such a view (Adler & Kwon, 2002).

The theoretical framework here combines arguments from the resource-based view (RBV) with arguments derived from ecological approaches. Networks provide resources and information advantages and, thereby, enforce competitive advantages and increase firm performance. However, the availability of resources is dependent on both networks and the distribution of resources in the environment. A firm which faces a resource constraint in its internal or external environment requires a different type of network than a firm operating in an environment with comprehensive resources. As a consequence, the relationship between networks and performance depends on the resources available in the environment. Furthermore, networks can increase the legitimacy of firms by providing resources that would not be available to the firm without the network. Hence, this study addresses one of the key questions in entrepreneurship research: How do firms create the legitimacy required to successfully compete in a market? Finally, resources at different levels of analysis affect the relationship between networks and performance. For example, Aldrich and Wiedenmayer (1993) point out that the environment affects the availability of resources at the organization level, population level and community level.

This meta-analysis aims to contribute to the existing literature on the relationship between networks and performance in several ways. First, it contributes to the literature on networks by distinguishing between cohesive networks and diversified networks. By integrating various approaches in a consistent framework, the present study extends prior work looking at isolated network characteristics. Second, we investigate the network-performance relationship in a contingency framework. More specifically, we theoretically identify moderator variables that relate to resource constraints in the firms' internal and external environments such as firm size and age, innovative versus non-innovative industries and financial market development. In doing so, the present study responds to calls to investigate networks in a contingency framework (Adler & Kwon, 2002; Martinez & Aldrich, 2011). Third, the contingency framework allows us to investigate the differential impact of cohesive and diversified networks. Hence, the study provides information as to when cohesive or diversified networks are effective or not. Fourth, the study relies on a meta-analysis aiming to estimate the size of the relationship between network characteristics and performance and assess the generalizability of this relationship. While several review articles study networking (Hoang & Antoncic, 2003; Jack, 2010; Westlund & Adam, 2010), they all use narrative methods to examine the role of networks in entrepreneurship research (with the exception of Stam et al., 2014). However, studies examining the relationship between networks and performance predominantly use quantitative designs (Jack, 2010) and, therefore, their results can very well be synthesized by meta-analysis. Finally, methodological moderators might account for some of the variance in reported relationships between networks and performance.

2. The literature on networks

2.1. The concept of networks

Networks can be defined in terms of a set of actors and a set of linkages between these actors (Brass et al., 2004). A network approach to entrepreneurship assumes that firms are embedded in social relationships which affect the entire entrepreneurial process (Aldrich & Zimmer, 1986) and, thus, that entrepreneurial organizations rest on

social constructions. Because this study investigates the effects of networks on firm performance, the conceptualization of networks focuses on the personal network, which encompasses the entrepreneur or top management team as well as the network partners and their connecting ties. Prior research shows that this type of network affects firm-level outcomes (Davidsson & Honig, 2003; Mayer-Haug et al., 2013; Vissa & Chacar, 2009) and that the personal network is an important predictor of firm-level networks (Maurer and Ebers, 2006).

The literature on networks covers a wide range of different network characteristics. A central feature is the distinction between network cohesion and network diversity (Martinez & Aldrich, 2011). Cohesive networks are related to strong ties, cohesion, closure and embedded relationships. The amount of time invested, emotional intensity, intimacy and reciprocal service affect network cohesion (Granovetter, 1973). Cohesive networks encompass strong social relations among members, who are almost exclusively connected to each other. Network diversity refers to contacts with people or institutions that exhibit different attributes and resources (Aldrich & Zimmer, 1986; Batjargal, 2003; McDonald, Khanna, & Westphal, 2008). Diverse networks encompass relationships with low emotional and infrequent contact (Granovetter, 1973), structural holes and broker positions.

This distinction is important, because cohesive and diverse networks provide different types of resource advantages. Cohesive networks ease the access to resources by focusing on solidarity and commitment and, thus, are related to opportunity exploitation. Diverse networks provide access to a wide range of sources of information and diverse points of view (Martinez & Aldrich, 2011). The access to multifaceted information supports the recognition of new opportunities and innovation (Elfring & Hulsink, 2007). Thus, both cohesion and diversity are important in the entrepreneurial process, though they affect different aspects of the entrepreneurial process.

Cohesiveness and diversity are not necessarily antagonists at the conceptual level (Martinez & Aldrich, 2011, p. 9). For example, trusted and coordinated resource exchange might very well occur in diversified networks. Furthermore, cohesive networks do not necessarily prevent the occurrence of innovative ideas (Obstfeld, 2005). Thus, cohesion and diversity are not mutually exclusive. Despite this point, entrepreneurs still need to decide what type of network to build. As they have limited time and financial resources that can be invested into building a network, entrepreneurs are faced with a dilemma: They can either build a small network with strong ties that require a high time commitment or they can rely on a larger, more diverse network with loose ties that require less time commitment. The resolution of this dilemma is related to the decision-maker's objectives (Westlund & Adam, 2010). Consequently, networks need to be arranged in such a way that they sustain the goals and aims of the firm (Batjargal, 2003).

2.2. The relationship between networks and performance

Prior research stresses the role of networks as a collection of resources that provide a competitive advantage to the firm (Combs & Ketchen, 1999; Eisenhardt & Schoonhoven, 1996; Gulati, Nohria, & Faheer, 2000; Lee, Lee, & Pennings, 2001). The RBV argues that a firm's competitive advantage originates in the resources and capabilities the firm controls, specifically those that are valuable, rare, imperfectly imitable and not substitutable (Barney, 1991). Resources obtained through networks share some features consistent with criteria suggested by the RBV. First, networks are valuable, because they are an asset which can be invested in, with the expectation of future rents and advantages that can be generated (Adler & Kwon, 2002). Second, network resources are rare because they are developed in a unique, path-dependent process. Networks also facilitate access to information and knowledge that is not readily available in a market (Gulati et al., 2000). Third, network resources are imperfectly imitable because they are socially constructed and depend on complexity and interconnectivity (Nahapiet & Ghoshal, 1998). Fourth, a network can create non-imitable and non-

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