

Latent Ties: Reconnection of Organizations to Boost Innovation

Emergent Research Forum

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Abstract

This paper highlights the temporality dimension of ties. Doing so we respond to recent calls for a more dynamic and processual understanding of networks. We proposed a model in which two antecedents of latent ties, network similarity, and length of the tie, will be tested. Also, our study addresses the relationship between tie latency and innovation. The model tests the impact of the interaction between the number of latent and strong ties on organizations innovative output will be studied. The study highlights the significance of latent ties in coping with the problems of redundancy of dense network and overloading of new weak ties.

Keywords (Required)

Networks, ties, latent, innovation, internationalization.

Introduction

The nature of organizational network ties and their implications for knowledge creation and sharing have been the subject of growing body of literature (Ahuja 2000). Researchers have argued that dense and compact cluster of firms with embedded and strong relationships accelerate the distribution of highly complex and contextual information due to the developed levels of interorganizational common identity, values, norms, and mutual trust (Uzzi 1997). A second stream of research contends that despite the fact that sparse networks are less effective at transferring tacit and embedded knowledge, compared to dense networks, they provide some advantages such as allowing firms to avoid redundancy and helping them finding heterogeneous and novel forms of knowledge by relying on more sporadic and distant contacts (Burt et al. 1998; Fleming et al. 2007). A third body of research tries to address the conflicting views by recombining them and acknowledging the potential of network configurations that encompass cohesion and structural holes, proximity and diversity, and strong and weak ties (Gulati et al. 2012).

However, these contrasting views on the optimal strength of ties raise questions of how to efficiently manage networks. Since, the highly established and solid interorganizational ties in a dense and closed cluster leads to increased *redundancy* (Gulati et al. 2012), while continuing to establish new ties can be costly in terms of search and can lead to *overload* of relationships, i.e., the restraints encountered by actors in supervising and sustaining a large number of links (Elfring et al. 2007). The negative influence of the overload of ties on stimulation of innovation has been found in hi-tech industries, such as motorsport and telecommunication (Delbridge et al. 2007). These studies rarely extend our understanding about these challenges of network redundancy and overload in ICT-mediated networks and our knowledge about the way we may overcome this issue remains relatively incomplete. This research extends understanding of the evolution of interorganizational ties by acknowledging a *temporal* aspect ties (i.e., their frequency of use and the length of the relationship). In particular, we want to find the answer to the following questions: 1) *What are the potential antecedents of latent ties and how they form such inter-organizational ties?* 2) *And, how the interaction between strong and latent ties influences performance of organization?*

Theoretical Background

Network ties, whether at the level of individuals or at the level of companies, can be described in various ways, but central to many contributions to social network theory is the concept of tie strength (Granovetter 1973). The analysis of the effect of tie strength, in terms of weak ties or strong ties, based on Granovetter’s (1973) seminal contribution, has had a profound impact on the current management and organization literature. The relevant literature labels a tie as strong or weak based on the *intimacy, frequency, and length* of interactions among the firms (Granovetter 1973).

Prior studies on network processes conceptualized interorganizational ties; in general, as a *static* phenomenon, while focusing on whether they are strong or weak. This approach is useful but restricts our understanding of the dynamics of ties. Put it differently, the extant network literature assumed that time and history do not affect inter-organizational ties. Only recently temporal characteristics of ties have been the subject of some network studies (Kilduff et al. 2016; Mariotti et al. 2012). Beside, the role of ICT-mediate interactions in formation and development of interorganizational ties has recently been recognized and found significant..

Latent Ties

Ties may become weaker rather than stronger, which leads to the state of latency. Latent ties are established relationships that are currently inactive (Levin et al. 2011). The latency of tie is not a permanent condition (See Table 1). It is possible that after a while actors reactivate their relations and conduct meaningful interactions (Levin et al. 2011). For instance, reactivation prior latent ties found to be a source of novel information for an entrepreneurial network by Steier et al. (2000). Likewise, Levin et al. (2011) studied firms’ reconnections with latent ties and its consequences and found that past relations can be reactivated and provide efficient access to potentially critical knowledge and other resources. Such findings suggest that social network of individuals and organizations have a memory and embedded time dimension. In a longitudinal study of firms in the motorsport industry, Mariotti et al. (2012) found that latent ties can provide a quicker and smoother way to handle unpredicted new developments and emerging problems. However, the persistence of redundancy and minimal development in the content of the exchange, may signal the decay of the relationship.

	Strong tie	Weak tie	Latent tie
Orientation and regulation of relationships	Mutual reciprocity, trust, norms	Self-interest, contracts	Deferred reciprocity (may be reactivated)
Frequency of interaction	High	Varies	Declined
Length of relationship	Long term	Varies	Long term

Table 1. Typology of Ties

Hypotheses

Drawing on the social capital and highlighting the importance of recognizing inter-organizational latent ties; in the following section we develop our hypotheses and propose a research model (Figure 1).

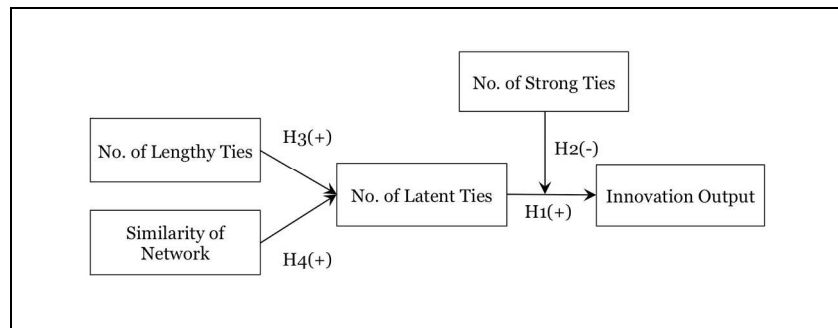


Figure 1. Research Model

The innovation literature demonstrates that firms' innovation processes depend strongly on external actors, e.g., users, suppliers, universities, and competitors. The distributed or open (Chesbrough 2003) nature of the innovation process is derived from its information and knowledge requirements: innovation necessitates combinations of a variety of new and existing knowledge bases located inside and outside the focal firm. We develop the hypotheses that high levels of social capital aspects, i.e. types and numbers of inter-organizational ties, may impact the performance of local firms in the form of innovation outputs, because of the tendency of social capital to favor information and knowledge flows among firms and external actors.

An indirect consequence of companies' searches for new technological knowledge and new ties is "redundancy," a key factor in the weakening of relationships. Redundancy signifies the duplication of knowledge and resources and the reduction in the relevance of the knowledge obtained from existing ties. An example is when racing car manufacturers suspend the use of specific parts or components to try out alternative solutions which may offer better performance results (Delbridge et al. 2007). Likewise, empirical evidence suggests that high dyadic communication frequency is indeed positively associated with the amount of knowledge overlap between the source and the recipient (Reagans 2011). Moreover, the easiness of cooperation with familiar partners, and the uncertainty associated with the formation of new ties raises the cost of making the investments that are necessary to initiate and to consolidate new relationships. This *relational inertia* can make established relationships extremely resilient to losses in their instrumental value.

Such an old and strong tie can be temporarily suspended due to providing repeated and obsolete knowledge. However, those latent ties still remain as part of the network of the focal firm (Mariotti et al. 2012). Over time, with new industry needs or through strategic developments on the part of firms, these relationships may be reactivated and revert into strong ties. Put it differently, establishing strong ties are not necessarily best suited for dynamic environments. For example, an empirical study's findings indicate that latent ties may remain important to motorsport companies, and their endurance guarantees that valuable connections to resources and knowledge are not lost (Delbridge et al. 2007). In other words, to boost the innovation output, it is more efficient (less time and resource expensive) and more effective (shared history and understanding) to reactivate latent ties to work in new ways and/or exchange different resources rather than to forge new potential ties (Mariotti et al. 2012). Fritsch et al. (2010) found that latent ties facilitate importantly the absorption of knowledge and information by firms, which provides firms a "fertile ground" and provide to them a dynamic innovative capability (Capaldo, 2007). Also, latent ties contribute to tacit knowledge exchange and trust building (Gilsing et al., 2007). Besides, Freel et al. (2009) find that size of networks (measured by the number of all types of ties) ensures the access to complex ideas and leads to innovation outputs. Hence, a larger number of latent ties may provide future multi-connectivity and further diversity of knowledge. Therefore, we hypothesize that:

H1. The number of latent ties will be positively associated with innovation output of a firm.

Having currently numerous active and strong ties may decrease the ability of firms in preserving and realizing valuable latent ties. Prior studies found that firms with many active ties may be more constrained in their ability to absorb new information and to respond to it as flexibly as firms with few active ties (Boschma et al. 2010). Moreover, we may argue that the relative addition to knowledge through latent ties is likely to be greater for firms with few strong ties than for firms with many strong ties. Availability of multitude latent ties could be beneficial more for the firms with limited strong ties. Moreover, strong ties may create lock-in effects (Uzzi 1997), which can lead to relational inertia and inability to realize reactivation of valuable latent ties. Thus, a firm who focuses on strong ties runs the risk of getting "trapped" in less rewarding knowledge transfer relationships (Anjos et al. 2013). Even if these risks can be offset, there are limits on the number of strong ties firms can maintain because of the maintenance costs, and the time requirements associated with strong ties (Mariotti et al. 2012). Hence we hypothesize that:

H2. The relationship between the number of latent ties and the innovation output of a firm will be *negatively* moderated with the number of strong ties of the firm.

In order to explain the association between types of tie and social similarity, we should focus on inter-organizational dynamics in generating the ties. Reagans (2011) applying homophily effect found that strength of a tie can be predicted based on similarities in demographic characteristics of the parties.

Homophily effect explains that ties are likely to be developed within parties which sharing a similar demographic characteristic (McPherson et al. 1987). Although studies argue that higher levels of homophily lead to strong ties, however, they generally assumed static nature of the ties. However, as stated earlier, the temporality of tie formation needs to be considered to grasp a more realistic understanding of tie formations (Kilduff et al. 2016; Mariotti et al. 2012). As ties evolve and grow within partners from a similar circle, and as time passes, due to the overlapping knowledge domain and redundancy, those ties can turn into latent ones. This formation of latent ties happens since the research findings indicate that the positive effect that opportunity had on relationships between socially dissimilar parties declined as social similarity became more salient (Reagans 2011). The similarity of the circle for a focal firm is defined as having high degrees of *structural equivalence* or having identical ties with other firms. Thus, we hypothesize that:

H3. The number of lengthy ties of a firm will positively associated with its number of latent ties.

H4. The more ties with organizations from similar networks a firm maintains, the larger will be its number of latent ties.

Proposed Methodology and Data Analysis

The focus of the study is on partnerships in technology firms, which are mainly using ICT (e.g., VoIP/video based interactions) in formation and managing of the network of their ties. Technology firms are an appropriate context to study the value of inter-organizational relationships. The proper source of data would be the MERIT-CATI. We will study computer and telecom sectors, which are generally accepted as high-tech sectors because of their R&D intensity, their level of new product development, and their patent intensity.

Innovation output, the dependent variable, will be measured through the patenting frequency of each firm, the number of patents received in a given year. This study will use intimacy that has accumulated over the life of a relationship and its interaction with the length of a tie as the two main indicators of a tie's strength (Bertrand-Cloodt et al. 2011). To conclude whether a tie is latent or active we will look at the time that has elapsed since the last interaction. In this regard, we adopt a three-year cutoff period as Levin et al. (2011) argues that after a three-year period of inactivity a tie becomes latent. Network similarity is measured using the standard network indicator, structural equivalence (Borgatti et al. 2002). The study will control for a number of variables, consistent with prior research on inter-firm partnerships, such as R&D intensity and firm size. Dyads are the units of analysis and because observations are dyads each of the observations are not independent. Therefore, we analyze the data with hierarchical linear modeling (HLM) because it does not require independent observations (Hofmann et al. 2000).

Discussion

This paper investigates the issues of network dynamics and evolutions of inter-organizational ties through distinguishing latent ties, an extension of the strong/weak ties. It introduces antecedents of latent forms of a tie and empirically explores the processes of tie development and network management. The study highlights the centrality of latent ties in coping with the problems of redundancy of dense network and overloading of weak ties.

Besides, our study addresses the relationship between tie latency and innovation. Most previous research on innovations has found a consistent relationship between different types of ties, specifically weak ties and innovation. By contrast, our study suggests that latent ties have a positive effect on aspects of innovation, which is consistent with what Mariotti et al. (2012) found.

Also, the proposed model accounts for the interaction between numbers of strong ties and latent ties, which results in organizational performance. By testing for the moderation role of the number of strong ties in the link between the number of latent ties and innovation output, this paper sheds much-needed light on how the dual challenges of network redundancy and overload can be addressed (Gulati et al. 2012; Maurer et al. 2006). In fact, we wish to empirically test if benefits of a higher number of latent can negate problems of high number of strong ties. This way we may provide proof for our argument about the criticality of latent ties in rapidly changing environment.

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