

# Firm Networks, Dynamic Capabilities, and Organizational Performance

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## Abstract

Recently, strategy scholars are concentrated on the studies of the firms' networks to help explain the differential success of the firms in their landscapes. Networks serve as a vital conceptual links between firms' actions and structural constraints and between firms' relations and collective dynamic processes. Such relation or connection is critical to firms in achieving the objective and performance by helping them to access to broader sources of information and to acquire new skills and knowledge.

However, the few studies focus on how a firm allocates the network resources which may influence its internal resources, competences, and capabilities in turn. According to the perspective of dynamic capabilities, the studies unveil that the firm's distinctive competences and capabilities are based on its current specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and buyers. Moreover, the studies state that those competences and capabilities are shown on the process of adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment. In other words, a firm has to leverage the dynamic capabilities effectively from the cycling process of absorption to the process of allocation in the existed networks.

Hence, this paper will pose the question "How do a firm's dynamic capabilities interacting network ties and positions to influence its performance?" and answer this question by integrating network perspective and dynamic capabilities perspective. This presented paper will try to link the relations between network and dynamic capabilities, to explore the interactions within each other, and to infer integrated conclusions. Finally, this paper expects to provide some theoretical insights and managerial implications.

## Introduction

Depending on the revolution of the strategic research (Pisano, 1994; Grant, 1996; Teece, Pisano & Shuen, 1997), the scholars have explained how and why certain firms have competitive advantage in situations of rapid and unpredictable change. In these markets, where the competitive factors are shifting, the dynamic capabilities by which firm managers integrate, build, and reconfigure internal and external competencies to address rapidly changing environments are served as one kind of the organizational competences, and become the source of sustained competitive advantage (Teece et al., 1997). According to the general definitions (Teece et al., 1997; Eisenhardt & Martin, 2000), the scholars figure out the cycling process and networking phenomenon in order to integrate, build, and reconfigure resources from the existed networks which firms are and are going to confront. In other words, firms probably have to effectively manipulate the dynamic capabilities from the cycling procedure of absorption to the procedure of allocation in the tight networks, especially external networks, which even regard as ones of the precious resources.

However, there are few academic discussions about the importance of the networks relating to dynamic capabilities in the present strategic research. Interestingly, from sociological perspective, the networks are the foundation of social capital and can simultaneously capture individuals and structures, thus serving as a vital conceptual link between actions and structural constraints, between micro and macro level analyses, and between relation and collective dynamic processes (Lin, 2001). Moreover, Lin (2001) explains the importance of using the networks such as social connections and social relations in achieving goals with abundant social capital. It's to state that social capital accessed through such connections and relations is critical to individuals, social groups, and organizations in achieving the objective and performance, but not to state why and how to achieve organizational goals. Hence, different to the problem, mentioned in the preceding paragraph, between networks and dynamic capabilities, the strategic problems of social capital are that why and how social capital does reach the goal of the firm.

By synthesizing the overlapping relations of the two questions between

dynamic capabilities, social networks and organizational performance (goal), this article would like to try to link the relations between social network, dynamic capabilities, and organizational performance, consequently to explore the interactions within each other, and finally to infer integrated conclusions.

## Literature Review

### Social Network

The basic concept of social capital is that the people who do better are somehow better connected (Burt, 1992). People or groups are connected to others, trusting others, obligated to support others, and dependent on exchange with others. By holding a certain position in the structure of these exchanges people can regard it as an asset. That asset is called social capital resulting from specific relations and networks and, in essence, it is a concept of location effects in differentiated markets (Burt, 1992 & 2000). In other words, social capital is an asset into which other resources can be invested, with the expectation of a future flow of benefits. Through investment in building their networks of external relations, both individual and collective actors can augment their social capital and thereby gain benefits in the form of superior access to information, power, and solidarity (Uzzi, 1997; Hansen, 1999; Coleman, 1988; Powell & Smith-Dowerr, 1994; Podolny & Page, 1998).

Therefore, from the above basic studying point, some social scientists are concentrated on the studies of the external relations such as relations an actor maintains with others, the structure of relations among actors within a collectivity, or both type linkage, and also focus primarily on social capital as a resource that inheres in the social network connecting the focal actor to other actors (Baker, 1990; Bourdieu, 1985; Burt, 1992; Potres, 1996). Through such research perspective, social network and social capital can help explain the differential success of individuals and firms in their competitive rivalry, because the actions of individuals and groups can be greatly facilitated by their direct and indirect links to other actors in social networks (Alder & Kwon, 2002).

Nevertheless, based on competitive perspective of social network, social capital facilitates firms to access to broader sources of information (Uzzi, 1997), to improve information's quality, relevance, and timeliness, to acquire new skills and knowledge (Powell and Smith-Dowerr, 1994; Podolny and Page, 1998), to use the power of the position in network to get things done and achieve their goals (Burt, 1992), and with solidarity to encourage compliance with local rules and reduce the need for formal controls (Coleman, 1988), it has to point out how a firm allocates the network resources which may influence its internal resources, abilities and competences in turn.

Recently, dynamic capabilities are used to explain how a firm could be effectively to align and integrated resources (Clark & Fujimoto, 1991; Dougherty, 1992), and where to gain and release the resources from external sources (Powell, Koput, and Smith-Doerr, 1996), and, thus, in this article, it would be using the dynamic capabilities to point out how a firm allocates the network resources, and to explore the interactive relations between each other.

### **Dynamic Capabilities and Social Network**

Leonard-Barton (1992) proposed the concept of dynamic capabilities, and referred them as the firm's abilities to integrate, build, and reconfigure internal and external competences to address rapidly changing environment. He proposed that dynamic capabilities reflect organization's abilities to achieve new and innovative forms of competitive advantage given market positions and path dependencies. Furthermore, Teece et al. (1997) identified several classes of factors (process, position, and path) that will help determine firm's distinctive competences and dynamic capabilities. Process refers to the way things are done in the firm, or what might be referred to as its routines, or patterns of current practice and learning. About the statement of position, it refers to a firm's current specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and buyers. And, sequentially, path refers to the strategic alternatives available to the firm, and the presence or absence of increasing returns and attendant path dependencies. It's said that dynamic capabilities involve the firm's and its manager's reactions for the dynamic environments through organizational process shaped by the firm's asset positions and molded by its evolutionary paths, and also involve the gain and release of resources.

While the market system supposedly influences the economy, managers coordinate or integrate activity inside and outside the firm. How efficiently and effectively internal coordination or integration is achieved is becoming very important. Likewise, for external coordination, strategic advantage would require the integration of external activities such as buyer-supplier relations which this article would like to state from social network perspective as following. And, here is to define dynamic capabilities as the firm's renew capacities of adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the

requirements of a changing environment.

Asanuma (1989) and Dyer (1996) respectively suggested that productivity gaining in the value chain is possible when trading partners are willing to make relation-specific investments and combine resources in unique ways. It initially indicates idiosyncratic inter-firm linkages may be a source of relational rents and competitive advantage (Dyer and Singh, 1998). Similarly, Powell et al. (1996) found that the locus of innovation in the biotech industry was network, and argued that biotech firms who unable to create or position themselves in learning networks were at a competitive disadvantage. Because patents were typically filed by a large number of individuals working for a number of different organizations, including biotech firms, pharmaceutical companies, and universities. Such studies partially figure out that firm's network relations seem to help gain competitive, but not to describe by which means to gain that.

A comparison of Toyota's and GM's production networks (Dyer, 1996) could illustrate how inter-organizational networks can create firm's competitive advantage by sharing knowledge, one of formations of dynamic capabilities (Tasi & Ghoshal, 1998; Eisenhardt & Martin, 2000). Toyota has developed a number of practices that facilitate knowledge transfers to and among suppliers. For example, Toyota may transfer knowledge directly to suppliers, through its operations management consulting division consultants, who will reside at the supplier for days, weeks, or even months to see that transfer take place (Womack et al., 1990). Toyota also transfers its personnel to the suppliers to increase the supplier's ability to assimilate and apply the new knowledge. These transfers result in dense inter-firm social networks that increase partner-specific absorptive capacity. Consequently, Toyota personnel know what knowledge will be useful to supplier, whom to contact at the supplier, and where the absorptive capacity resides at the supplier (Dyer, 1996; Dyer & Singh, 1998). In contrast, GM does not have a supplier association to facilitate knowledge-sharing, nor does GM transfer personnel to suppliers to facilitate inter-firm knowledge-sharing activities. It is not surprising at the reporting result that there is significantly greater knowledge sharing and better performance between Toyota and its suppliers than between GM and its supplier (Dyer, 1996, Dyer & Singh, 1998). Now, it clearly figures out that by intensive inter-firm networking with a firm could learn and increase absorptive capacity, one kind of dynamic capabilities (Eisenhardt and Martin, 2000), to

generate competitive advantage.

Although the relations and interactions of inter-firm networks really influence competitive advantage generated by firm's capabilities, it has to further discuss the two more questions- the extent of networking relations that supplier and buyer ties, and the position in the network where a focal firm locates could influence firm's development of dynamic capabilities, respectively.

## Propositions

### **Interactions between firm's network ties and dynamic capabilities**

Granovetter (1985), Coleman (1988), and Burt (1992) point out that direct and indirect network ties provide access both to people who can provide support, and to the resources those people can mobilize through their own network ties. In other words, social network ties are channels for information and resource flows, and through social interactions, an actor may gain access to other actors' resources. Such access allows innovators to go across formal lines and levels in the organization to find what they need.

Moreover, the network literatures on tie strength have documented the implications of strong interaction ties for trust and trustworthiness (Krackhardt, 1992; Nelson, 1989). Frequent and close social interactions permit actors to know one another, to share important information and to create a common point of view. It's to figure out when two parties begin to trust each other, they become more willing to share their resources without worrying that they will be taken advantage of by the other party. Thus, cooperative behavior, which implies the exchange or combination of resources, may emerge when trust exists. As soon as trusting relationships develop inside a network, actors would build up more close ties that may become important channels for other actors in the network to adapt, integrate, and reconfigure value resources, and to develop its dynamic capabilities.

However, Hansen (1998) provides a nice example in the study and showed different effectiveness of the different extent of ties. He pointed out that weak ties facilitate the cost-effective search for codifiable information, while strong ties facilitate the cost-effective transfer of complex information and tacit knowledge. Uzzi (1997) makes a similar point: if the task requires trust and cooperation, embedded ties with repeated exchanges between a small numbers of partners are preferred, but if the task requires economic rationality and makes competition, arm's length market relations with more effective. Kern (1998) makes a similar argument about the current state of German industry. He notes that there is too much inter-firm trust in Germany today to support radical innovation, firms are too loyal to established suppliers and, thus, are slow to seek out and adopt more novel ideas. It is reasonable, therefore, to expect that a closer firm is likely to be a popular exchange partner for other firms in the network, but dependent on which kind tasks. Hence, this article argues that different level extent of network ties may result

in different types of resource exchange and combination among networks for different tasks, and then influence the generation of dynamic capabilities. Hence, we could propose the proposition as follows.

*Proposition 1: The different extent ties the firm maintains should fit to different tasks with which dynamic capabilities will be used to deal, and well to develop.*

*Proposition 1a: The strong ties the firm maintains should fit to the routine time-saving task with which dynamic capabilities will be used to deal, and well to develop.*

*Proposition 1b: The weak ties the firm maintains should fit to the innovative task with which dynamic capabilities will be used to deal, and well to develop.*

### **Interactions between firm's network position and dynamic capabilities**

Firms draw advantages from their own inter-organizational networks such as joint venture relationships or joint marketing efforts, allowing for economies of scale or increased expertise. Talmud (1999) focuses on network centrality and network cohesion characteristics of software startups firms in the fast growing high tech sector in Israel. He showed how a corporate membership in a cohesive clique, being located at the center of an inter-organizational business network, is well transformed into or easily gains corporate social capital. A key position in a central clique of an inter-organizational network provides a corporate actor with a rent-seeking capacity enabling a business organization to extend its profitability, or to accrue valuable resources necessary for corporate success. Network centrality in the relevant industry networks enables corporation to imitate successful patterns of sense making and strategy formulation that is especially important due to the environmental conditions of severe uncertainty the software firms operates under.

Through inter-firm relations, firm can gain timely and affordable access to new technology. Stuart (1999) shows, for example, how prestigious semiconductor firms establish license alliances in which they gain the rights to produce and sell the proprietary technologies of competing organizations. It is because of their network location and ability to certify the initiatives of other organizations that prestigious firm will gain access to endeavors of others. The correspondence between certifiable ability and access implies that prestigious firms enjoy a powerful positional advantage.

The network literatures on tie strength have documented the implications of strong interaction ties for trust and trustworthiness (Krackhardt, 1992; Nelson, 1989). Frequent and close social interactions permit actors to know one another, to share important information and to create a common point of view. Therefore, an actor occupying a central location in social interaction network is likely to be perceived as trustworthy by other actors in the network. Outside firms, social interactions among different organizations blur the boundaries of those institutions. A firm then has more opportunities to exchange or to gain its resources with others, and, consequently, to adapt, integrate, and reconfigure its resource. Powell et al. (1996) had documented the importance of location of inter-firm interaction for the creation and diffusion of innovations within complex networks. Thus, a firm that is central in a network of social interactions likely has greater potential to combine and exchange resources with other firms because of its position advantage in the network. Hence, we could propose the proposition as follows.

*Proposition 2: The more central of the network position the firm locates, the grater the firm's dynamic capabilities will be generated.*

### **The Relation between Dynamic Capabilities and Organizational Performance with Considering of Social Network**

Previous research suggests that firms occupying central network positions with greater network ties have superior access to information and, thus, are more likely to increase the number of their alliance in the future (Gulati, 1995; Mitchell & Singh, 1996; Walker et al., 1997), and are also more likely to adapt, integrate, and reconfigure resource they need. When a firm is well positioned in networks, the firm has an access to more reliable information about potential partners because of trusted informants within the network who may have direct experience with potential partner (Burt, 1992; Granovetter, 1985). An information-rich position and the central location within a network, therefore, provides a firm with additional information about the nature and degree of accessibility of complementary resources of potential partners to proceed with the resources adapting, integrating, and reconfiguring.

The ultimate goals of a firm are to achieve the superior performance by its operation of the dynamic capabilities. There is a question of this study that

how does a firm's dynamic capabilities interacting with network ties and positions influence its performance. Although this study has stated the how a firm's dynamic capabilities interact with network ties and positions through the previous inferences, it has to prove the positive or negative relations between dynamic capabilities and organizational performance with the factors of external social networks.

Initially, several recent studies report high performance from groups with external networks: Geletkanycz and Hambrick (1997) on higher company performance when top managers have boundary-spanning relationships beyond their firm and beyond their industry, Ahuja (1998) on the higher patent output of organizations that hold broker positions in the network of joint ventures or alliances at the top of their industry, Pennings et al. (1998) on survival of accounting firms as a function of strong partner ties to client sectors, Stuart and Podolny (1999) on the higher probability of innovation from semiconductor firms that establish alliances with firms outside their own technological area, McEvily and Zaheer (1999) on the greater access to competitive ideas enjoyed by small job manufacturers with non-redundant sources of advice beyond the firm, Hansen et al. (2000) on computer new – product teams more quickly completing their task when team is composed of people with more non-redundant contacts beyond the team, Baumol et al. (1982) on the faster revenue growth and more patents granted to biotechnology firms with more kinds of partners firms.

The evidences of above common features show the positive relations existed between firms' external network and performance, but it does not imply that any particular dynamic capability is exactly alike across firms to influence performance. Therefore, this study should take, for example, knowledge creation processes, a crucial dynamic capability especially within high-technology firms to further verify the relations between dynamic capabilities and organizational performance with the factors of external social networks.

A common feature across successful knowledge processes is explicit linkage between the focal firm and knowledge sources outside the firm. According to the pioneering research of Allen (1977), these linkages were a small number of gatekeepers within the firms. These individuals maintained active communication with scientists at other firms, government laboratories,

and universities. Similarly, Henderson and Cockburn (1994) found that external linkages were crucial to effective knowledge creation processes in their extensive study of the pharmaceutical industry. These linkages, however, took the form of pro-publication incentives by which scientists were rewarded for maintaining external links to the wider scientific community through the use of publication in scientific journals as a promotion criterion. Similarly, Powell et al. (1996) found that knowledge creation processes that included external linkages in the form of significant alliance relationships led to superior R&D performance within biotech firms. So, while external linkages are necessary for effective knowledge creation, those linkages can take varied forms including informal personal relationships, relationships driven by promotion criterion and formal alliance.

Besides, Adler and Kwon (2002) argued that an actor's contact abilities (capabilities, resources) could not only find a source of social capital, but also refer as the complementary resources to achieve better performance. And, Hargadon and Sutton's (1997) study of an industrial design firm provides another example. New design ideas for one client often come from ideas developed in the context of work for other clients in other industries, Hargadon and Sutton show that a distinctive ability is needed to take advantage of the social capital created by the network of clients, and then to combine these disparate ideas to generate new, innovative ones for better market performance. Hence, we could propose the proposition as follows.

*Proposition 3: The dynamic capabilities with more central network positions and greater network ties the firm demonstrates, the better the performance the firm presents.*

## **Conclusion**

This article would try to use social network theory to confirm the importance of inter-firm networks for firms' superior performance by interacting with network ties, network position and dynamic capabilities. This study provided network ties and network positions implications for the influences of dynamic capabilities and firm's performance by integrating social capital and strategic perspective. Such an emphasis on the role of inter-firm networks is consistent with recent development in the strategy literature, the argument that organizational advantage (Ghoshal & Moran, 1996; Dyer & Singh, 1998) can be achieved through resource sharing and gaining among different organizations. Since each organization usually possesses unique resources, a study of the exchange and transfer, renewal of such resources between different organizations from firm-specific network may provide greater insights for business than a study of inter-unit network in firm does.

This study of the external social network of an organization also poses an interesting question: How does a firm's dynamic capabilities interacting network ties and positions to influence its performance? This study suggested and demonstrated that each dimension reinforced the firm's performance by developing and using its dynamic capabilities. There are clearly that different level ties and different location of networks that may influence the creation and accumulation of dynamics. Nevertheless, it's suggested for later studies to conducting an experimental test on such issue for the advance verification.

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