

Öberg, Christina

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Empirical paper

## The role of business networks for innovation

Christina Öberg<sup>a,b</sup><sup>a</sup> The Ratio Institute, P.O. Box 3203, SE-103 64 Stockholm, Sweden<sup>b</sup> Örebro University, School of Business, SE-701 82 Örebro, Sweden

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### ABSTRACT

A business network consists of directly and indirectly connected companies, where social and economic ties help to understand these connection. Innovations could be seen to relate to business networks in two ways: they may result from interaction between business partners, or they would need to fit into, or through changes to interaction patterns among various business partners, be fitted into new or current business networks. In the literature on innovation, the incremental, radical, or disruptive characteristics of the innovations are frequently described as degrees of newness. This paper categorizes characteristics of business networks based on their role to create various types of innovations, and based on the various types' consequences for the business network. The empirical part of this paper is based on six case-study examples from interviews performed by the author. The findings suggest links between the type of innovation, and the role of the network and network consequences. The paper contributes to previous research through discussing the role of business networks for various types of innovation. Furthermore, the paper contributes to previous research through indicating the various types of innovations' consequences for the business network. Most previous research on business networks and innovation only concerns itself with how various parties participate in idea generation and co-development of innovations, while the consequences for the business network is not described extensively.

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### Introduction

The economic and social dimensions of repeated exchanges between companies construct the business relationships (Dwyer, Schurr, & Oh, 1987; Granovetter, 1985). A business network, in turn, consists of directly and indirectly connected business relationships with companies as the nodes in these networks (Anderson, Håkansson, & Johanson, 1994; Emerson, 1962). In the repeated exchanges, companies start to exchange knowledge, adapt to one another and invest both monetary and social resources in one another (Hallén, Johanson, & Seyed-Mohamed, 1991). Innovations, that is, new or modified ideas aimed at enhancing customer value (O'Sullivan & Dooley, 2009) could be seen to relate to business networks in two ways: they may result from interaction between business partners, or they would need to fit into, or through changes to interaction patterns among various business partners, be fitted into new or current business networks. In the literature on innovation, the incremental, radical, or disruptive characteristics of the innovations are frequently described (Tidd & Bessant, 2009). This refers to the degree of newness of various innovations. This paper

sets to discuss the role of business networks in the creation of innovations, and in the ability to turn ideas into commercial products or services. More specifically, the paper relates the characteristics of business networks to incremental, radical, and disruptive innovations. It focuses on the characteristics of the business network to develop these various types of innovations, and what consequences the different types of innovations have for the business network.

The purpose of the paper is to categorize characteristics of business networks based on their role to create various types of innovations, and based on the various types' consequences for the business network. The characteristics of the business network is analyzed through the social and economic ties among companies in dimensions of strength and length of the business relationships between parties (Granovetter, 1973).

The paper provides examples from different business networks and innovation processes. Rather than seeing these networks as constructed for the reason of innovations (Dhanarag & Parkhe, 2006), the paper targets the embeddedness of innovation processes in business exchanges, either as the starting point of the innovation process, or as the business exchanges needed to succeed in commercializing the innovation. The paper contributes to previous research through discussing various characteristics of business networks and linking them to innovation.

E-mail address: [christina.oberg@oru.se](mailto:christina.oberg@oru.se)

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The rest of the paper is structured as follows: After this introduction, a brief overview on previous research on innovations and business networks is presented. This is followed by the theoretical framing of social and economic ties and their length and strength. Thereafter the research design is presented. Empirical findings are presented in a table and then discussed in the analysis section. The paper ends with conclusions and ideas for further research.

## Business networks and innovation

The definition of business networks varies among disciplines, and essentially targets such issues as: (i) whether the network is constructed or based purely on business exchanges; (ii) whether the network is unlimited or delimited in space or to specific tasks; and (iii) the weight and importance of social ties (among individuals) for the business (economic) exchanges. The literature gives quite a diverse presentation of business networks and their role for innovation (cf. Ozman, 2009; Pittaway, Robertson, Munir, Denyer, & Neely, 2004). This is partly divided by discipline, where innovation management research more often seems to focus on the constructed, purpose-based network that either supports an innovative firm (e.g., Autio, 1997), or in a community-based setting involves parties that together create new ideas (David & Shapiro, 2008; von Krogh, Spaeth, & Lakhani, 2003). Most of that literature focuses on the creation of new ideas, rather than the consequences for business networks. The newness of ideas may imply them being radically new, while this is rarely described. The community-based development further implies incremental improvements to ideas made sequentially or in parallel by various parties.

In business studies, the business network is often described as the starting point for new ideas. This applies specifically to those many business network studies related to the industrial network approach (Håkansson, 1982) and that describe business networks as indefinite webs of interconnected business parties. Based on how innovations for the most part are described as emerging from existing business ties, ideas are for the most part incremental (Håkansson, 1987). While the social ties are acknowledged, key focus is on the economic exchanges for these innovations. An exception is the studies by Story, O'Malley, Hart, and Saker (2008), that imply how social ties are of key importance, while too strong economic ties may hinder the development of radical innovations.

In studies on entrepreneurship and social capital, respectively, the social ties of the innovator – as a private person – is emphasized. These are important to create the business network of the entrepreneur, or may create sources for his/her ideas (Aldrich & Zimmer, 1986; Slotte-Kock & Coviello, 2010). This thus emphasizes the transition from social ties to also include economic ties, and ideas may be of various types.

Hence, most focus in previous studies suggest to be on incremental ideas, especially when ideas result from ongoing business contacts, while networks constructed for specific purposes may well result in more radical ideas. The social ties either suggest functioning as the basis for later economic ties, or they may play a specific part for the development of radical ideas, then emphasizing their trust-building characteristics among otherwise only loosely connected parties. Little seems to be known about the consequences of innovations for business networks, and the current literature does not provide a complete picture on the relation between social and economic ties and the type of innovations.

## Social and economic ties

The literature on networks emphasizes the role of social and economic ties to various extent. The social ties refer to the connections among individuals, include trust, commitment (Granovetter, 1985),

and tacit knowledge, and build on friendship developed between individuals. The economic ties are the links created through business transactions and hence connect various organizations to one another. They may become deepened based on the repeated exchanges, investments made in and for the other party, and adaptation between the parties.

In research, the importance of the social ties for the economic exchanges has been elaborated on, describing how social ties create the starting point for business exchanges (Aldrich & Zimmer, 1986; Ellis, 2011), how they through the commitment and trust stabilize ongoing business relationships, or create the foundation for repeated exchanges to occur, or even how they even over-live the business transactions (Havila & Wilkinson, 2002), and may lead to new economic transactions in the future.

The strength of the economic and social ties could be understood as the closeness among parties, the intensity of interaction, and the commitments made (Burt, 1992; Granovetter, 1973). This may well be correlated with the time length of the tie, as social and economic ties would develop over time (Burnham, Freis, & Mahajan, 2003). There may though be reason to analyze the length in time separately, since all long-term ties may not become strong, and since also a short-term interaction may result in strong ties.

Thus, the business network could be analyzed by means of the influence of social and economic ties, and their strength and longevity, respectively. This could then be linked to the newness of innovations, ranging from incremental to disruptive innovations. Incremental innovations refer to ideas of improvement. Radical innovations define ideas that new to the market. Disruptive innovations, lastly, refer to ideas that are not only new, but by definition challenges those parties currently producing the products or services they replace. The difference between radical and disruptive innovations relates to how the disruptive ones change parties, competitive stages, and redefine the use. The definitions of these various types of innovations imply how they would be related to consequences for the business network. The disruptive innovation would change network structures, the radical may do so to some extent, and the incremental innovations would not be expected to do so. However, this says nothing about their consequences for strengths and longevity of social and economic ties, specifically.

## Research design

The empirical part of this paper is based on some case-study examples from interviews performed by the author. The examples are briefly described in a table in the next section and provide illustrations of various types of innovations with a focus on product innovations. Data was collected through open-ended questions (length of interviews: approximately 1.5 h) with representatives of the focal firms presenting the new idea, and network party representatives from their network. These latter parties included customers, suppliers and collaborations parties, along with some financiers. In addition to interviews, newspaper items and annual reports were included as data sources. These functioned as providers of real-time information and enabled triangulation of data sources (Denzin & Lincoln, 2000; Huber & Power, 1985; Patton, 1990).

In the analysis of data, the individual innovation functioned as the unit of analysis, and the business network was delimited to those parties engaged in the innovation process and that saw consequences of the innovation. In some of the cases, the company did not manage to commercialize its innovation, and the changes to the business network are then described as requirements on the network to change.

**Table 1**  
Case summary.

	Case I	Case II	Case III	Case IV	Case V	Case VI
Size of company (no. of employees)	>500 employees	15 employees	5 employees	8 employees	30 employees	5 employees
Business network	Basically economic ties (long-term contracts): long-term with social ties linking to service agreements	Social ties important: long-term and strong. Economic ties closely linked to the social ties	Short-term (early idea company) with both economic (weak) and social (somewhat strong) content	Short-term (early idea company) with both economic (weak) and social (somewhat strong) content	Long-term, strong social ties. Economic ties followed social ties	Short-term (early idea company) with mainly economic (weak) content
Type of innovation	Incremental (improvements of existing machinery product)	Incremental (service innovation to individual customer)	Radical (automated system for cars, previously analogues)	Radical (sorting equipment for forest sector, previously handled by hand)	Disruptive (new media in advertising sector)	Disruptive (sensor technology for food production)
Business network's role for innovation	Generate idea for product improvement. Idea then diffused to other customers	Single-actor (customer) mainly as target for innovation	Mainly monetary provision. Idea by the focal company	Mainly monetary provision and some industry knowledge. Idea by the focal company	Ask for new solutions	Test prototypes, provide some money
Consequences for business network of innovation	Did not change the network structure, strength or longevity of ties	Did over-time increase strength of social ties and created ground for continued economic ties (equally strong)	Need to change hardware to fit with the system. Counteract through launching alternative or refuse adaptation	Need to change working methods. New parties introduced in terms of suppliers	IT-developers introduced to the sector. Weakening of social ties with previous parties	Expected introduction of new parties in the food sector. Did not work out

**Table 2**  
Categories developed.

	Incremental innovations	Radical innovations	Disruptive innovations
Creation of innovations	Current business network; strong social ties imply more probability to co-create new ideas	Focal party driving force, business network did often only include weak economic and social ties	Need to introduce new parties to the network (driven by focal firm)
Business network consequences of innovation	Strengthening of social ties to parties co-creating new ideas	Need for change among business partners, weakened (or dissolved) social and economic ties	Weakened social ties among current business partners or inability to create new business ties

## Empirical examples

Table 1 summarizes the empirical examples. The examples are collected from different sectors, with two-and-two in pairs representing incremental, radical, and disruptive innovations.

## Analysis

As can be read from the table, the business networks of the focal firms were short or long term and included strong or weak social and/or economic ties. More specifically, strong social ties suggest to be connected with service content as part of the business exchanges, while the length of the ties – economic and social – related more to whether the focal firm was a newly established or incumbent firm. In all these various situations, resulting innovations appeared of different types. What though seems to be the case for the disruptive innovations is that the focal firm created ties to new parties, from other sectors than the one the firm or its customers belonged to. These new ties were through their creation short term as the innovation was introduced, but would over time develop into strong economic ties. To exemplify, in Case V, the focal firm linked to IT-providers to introduce new solutions into the incumbent sector it currently acted in. The dependency on these new parties grew strong over time and the integration of solutions increased. The one-sided dependency on the new technology though meant that social ties were not strengthened while the economic ties were. The consequences for the business network included the introduction of these new parties, or how the focal firm (as a new company; see Case VI) created changes to the current business network. Any change that meant that business parties needed to change their products or introduced new parties, weakened or dissolved ties between the focal firm and these parties. Normally, the social ties were weakened with these parties if new parties were introduced, while the change of working methods or products included dissolved economic ties.

Although the incremental innovations may have introduced changes in what was offered or produced, they strengthened rather than weakened the current exchanges. Again, this was the result of how these innovations resulted from suggestions or needs of current business parties.

Thus, and in sum, the less newness the innovation provided, the more active was business partners in the creation of the innovation, while the more newness the innovation provided, the more changes they introduced – both in the actual introduction of the innovation and in terms of reactions – from the network. Social ties were strengthened if ideas related to current interaction patterns, while they may weaken if new ideas challenged current structures.

## Concluding discussion

This paper aimed to categorize characteristics of business networks based on their role to create various types of innovations, and based on the various types' consequences for the business network. The paper indicates how the current business network

only played an active part for the development of incremental ideas (Håkansson, 1987), while radical and even more so disruptive innovations were much more driven by the focal firm. For disruptive innovations, the new idea meant that new parties were introduced to the business network, often meaning that previously unlinked sectors were joint through these connections (Burt, 1992).

As for the network consequences, incremental innovations may have strengthened the social ties to current business partners, this specifically applied to those parties taking part in the innovation process. Radical and disruptive innovations meant weakened social ties and even dissolved economic ties, due to change requirements on these parties. In the case of disruptive innovations, the new parties introduced in the creation process provided increased dependence for the focal firm. This in turn strengthened economic ties to these parties, while the social ties remained weak. Table 2 summarizes these findings.

When comparing these findings with previous research on business networks and innovation, there is a difference in how previous research has suggested that strong social ties (while economic ties being weak), would foster radical innovations (Story et al., 2008; Story, Hart, & O'Malley, 2009). This current paper rather suggests that for radical innovations, business connections were non-existent or weak in both the social and economic dimension. In addition to this insight, which may be case specific, the paper contributes to previous research through discussing the role of business networks for various types of innovation. As the theoretical background indicated, most previous literature is quite unspecific about the type of innovations it refers to (cf. Ozman, 2009; Pittaway et al., 2004). Furthermore, the paper contributes to previous research through indicating the various types of innovations' consequences for the business network. As pointed out in the theory section, most previous research on business networks and innovation only concerns itself with how various parties participate in idea generation and co-development of innovations, while the consequences for the business network is not described extensively.

## Ideas for further research

This paper is based on a limited number of exemplifying cases. For further research, additional data collection and also validating quantitative studies are prompted. The examples in this paper include both young and incumbent firms as focal parties, and further research could ideally discuss differences in social and economic ties, and in types of innovations related to these two types of firms.

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