Perceived organizational identification and prototypicality as origins of knowledge exchange networks\textsuperscript{1}

Giuseppe Soda
Department of Management and Technology
Bocconi University and SDA Bocconi School of Management
Via Roentgen 1, Milan Italy
giuseppe.soda@unibocconi.it

Alberto Monti
Department of Management and Technology Bocconi University
Via Roentgen 1, Milan Italy
amonti.man@unibocconi.it

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INTRODUCTION

A long line of works supports the idea that knowledge is a key resource for a firm. In recent years, knowledge exchange has increasingly emerged as an important area of inquiry in the management literature such as strategy, organization, marketing, innovation and R&D, operations and supply chain (for a review see Phelps, Heidl & Wanda, 2011).

Within the multifaceted landscape of knowledge management in organizations, scholars and practitioners converge in looking at knowledge search, knowledge access and transfer as key processes. In fact, in order to innovate and generate new solutions, teams and individuals are usually in front a big dilemma: reinforce their pre-existing knowledge and focus problem solving activities on their own experience and on what has formerly demonstrated to be useful (March, 1991; Helfat, 1994; Martin & Mitchell, 1998; Stuart & Podolny, 1996) or search ideas and solutions through the access to knowledge hold by others, within or outside the organization (Gavetti & Levinthal, 2000).

Acknowledging the relevance of the social context in which knowledge exchanges emerge, we focus on intra-organizational knowledge exchange networks to address the fundamental question of which factors drive the access to others’ knowledge and so the formation of specific knowledge exchange ties. While previous works mostly considered knowledge provision or acquisition separately (for a review see Borgatti & Foster, 2003; Kilduff & Brass, 2010), we conceive knowledge exchange as both the provision and receipt of task information, know-how and feedback on a product or procedure (for a similar definition see Cummings, 2004: p. 352; Hansen, 1999) that will be captured by specific types of ties embodied in the advice and exchange of solution networks.

A long tradition in organization theory and social-psychology emphasize the role of social mechanisms and interpersonal interactions in knowledge sharing processes. Some empirical evidences show that, despite the availability of elaborate IT support, knowledge
management systems and the institutionalization of organizational practices and procedures aimed at selecting and storing knowledge, people primarily rely on their network of contacts within the organization to obtain information and generate new knowledge (Cross & Thomas, 2009; also see the survey conducted in 2002 by the IBM Institute for Knowledge-Based Organizations cited in Cross, Borgatti & Parker, 2002). A well established perspective on network multiplexity argues that knowledge flows might be systematically associated with other types of ties, both instrumental and affective. Most of these studies share the basic assumption that access to resources embedded in the network may influence the capacity of actors to search, access, transfer, absorb and apply knowledge (Nahapiet & Goshal, 1998; Phelps et al, 2011; Wasserman & Faust, 1994). Thus, network multiplexity or pluralism captures the dynamic tendency of individuals to construe social connections as pipes for a plurality of instrumental and affective contents. We believe, however, that knowledge exchange ties are content specific and their formation as well as their dissolution should be investigated independently from other types of intra-organizational ties. More precisely, in this paper we take on the challenge to theorize and offer a preliminary empirical test on the idea that individuals might be attractors of inward knowledge tie, and therefore occupy prominent positions (e.g. centrality) in knowledge networks, because they hold some relevant characteristics (e.g. Mehra, Kilduff, & Brass, 2001). Put differently, we look at knowledge tie formation and the subsequent centrality of individuals beyond the structure of their affective and instrumental networks.

In this vein, an influential research stream shows that when organizational actors share a superordinate identity, they are more likely to transfer knowledge (Darr, Argote & Epple, 1995; Ingram & Simons, 2002; Labianca, Fairbank, Thomas, Gioia & Umphress, 2001) and learn from different expert members (Van Der Vegt & Burdenson, 2005). Recent experimental works have also attempted to clarify the underlying mechanism through which superordinate social identity influences knowledge transfer, showing both direct and indirect effects on another’s
knowledge adoption to improve productivity (Kane, 2010; Kane, Argote & Levine, 2005). Specifically, we explore whether individuals’ emotional attachment to the organization (i.e. organizational identification) and the shared perceptions that they are typical representatives of a social category (i.e. an individual’s perceived prototypicality) influence their position in knowledge exchange networks.

In sum, we blend the logic underlying the social network research and those emerging from the social identity and categorization theory to try to propose a more integrated perspective on actors’ knowledge exchange networks. We suggest that only by considering both individuals’ and relational characteristic it is possible to offer a fuller explanation of the knowledge exchange phenomena (Argote, Mcevily & Reagans, 2003). In this vein, we may also contribute to social identity theory by focusing on the role of group prototypes and the subsequent prototype-based depersonalization of self and others in explaining an organizational process such as knowledge exchange (Hogg & Terry, 2000).

**Social identity, categorization theory, and knowledge exchange**

According to social identity theory (Tajfel, 1978; Tajfel & Turner, 1986), the identity of a person is constituted by an individual in conjunction with a social dimension. The first dimension is based on individual characteristics or idiosyncratic traits. The second is formed as a result of the sense of belonging to social groups and has important consequences from a cognitive, emotional and behavioural point of view. The description of *self* through various social categories (*self*-categorization process) and the awareness of belonging to social groups linked to the emotional and evaluative meanings attached to those groups, outline the social identity concept (Tajfel, 1978: 63). Self-categorization (Turner, 1985; Turner, Hogg, Oakes, Reicher & Wetherell, 1987) allows comparing groups and provides information on the different degrees of attractiveness among them. As a consequence, people will choose to identify with the
social groups judged most prestigious and desirable based on their own self-esteem enhancement needs. The categories are formed when the similarity among the attributes of the category are greatest and the similarity between the attributes of other categories are minimal (Rosch, 1978; Rosch & Mervis, 1975). The individuals’ experience and perception of these categories are not based on a complete discrimination of each attribute. Rather, people use mental abstractions - prototypes - that represent a “fuzzy” set of attributes of each category. This means that a single member - or “component” - of the prototype does not need to possess all the attributes in order to be associated to a particular category (Hogg & Terry, 2000). In synthesis, while self-categorization theory (SCT) specifies the underlying psychological process by which people define themselves in terms of personal and social identity, social identification is the process by which information on social groups relates to self, which leads individuals to perceive characteristic group features as self-descriptive and to adopt distinctive group norms as guidelines for their own behaviour.

We argue that viewing social identity theory and self categorization theory through the lens of social networks (Galaskiewicz, 2007) can help shed light on the knowledge sharing process and, in particular, to understand who is more likely to be prominent in the knowledge exchange network.

Organizational identification and knowledge exchange

A growing body of research offers direct and indirect evidence for the importance of shared social identity in the knowledge sharing process. Field studies on organizational identification and cooperation have highlighted this relationship. For example, Bartel (2001) shows that supervisors reported higher interpersonal cooperation and work effort for members whose organizational identification became stronger, while Dukerich, Golden and Shortell
(2002) show that organizational identification strengthens cooperative behaviours among physicians.

Research on organizational learning and knowledge management shows that when members (both the source and the recipient) share a superordinate identity they are more likely to transfer knowledge (Labianca, Fairbank, Thomas, Gioia & Umphress, 2001), for example, across stores owned by the same franchisee but not across stores owned by different franchisees (Darr et al., 1995; see also Ingram & Simons, 2002), and learn from diverse expert members (Van Der Vegt & Burdenson, 2005) even independently of the content of the message (Abrams, Wetherell, Cochrane, Hogg & Turner, 1990; Foreman, Ghose & Wiesenfeld, 2008). Recent experimental studies also attempted to clarify the underlying mechanism through which superordinate social identity influences knowledge transfer, showing both direct and indirect effects on the knowledge adoption of others to improve productivity (Kane, 2010; Kane, Argote & Levine, 2005).

With few exceptions (Hinds & Mortensen, 2005; Van Der Vegt & Burdenson, 2005), these studies do not measure an individual’s identification with a social category but manipulate the salience of a specific superordinate identity (or infer such identities through behavioural cues) and hence the perceived membership of individuals vis-a-vis other members. What is implicitly argued is that social identification results in bias towards members of the social group one identifies with (in-group bias) and cohesion among the group’s members (e.g., Kramer, 1991). In turn, it is likely to result in cooperative behaviours among organizational members (e.g., Dutton, Dukerich & Harquail, 1994: pp 254-255; Kramer, 1993) and in knowledge transfer especially when the merits of such knowledge are less recognizable (Kane, 2010). However, knowledge sharing is not without costs (e.g. Obstfeld, 2005).

We theorize that social identification acts as an inducement in fostering knowledge exchange behaviours. Put differently, when individuals identify strongly with an organization,
they are more likely to search for and provide knowledge to other organizational members (Kramer, 1993) also because they will be seen in a more favourable light (for a review see Hewstone, Rubin & Willis, 2002). According to Tajfel’s (1978: 63) original definition and its later elaboration by organizational scholars (e.g., Ellemers, Kortekaas & Ouwerkerk, 1999; Edwards, 2005), we consider identification as a multidimensional concept that comprises three distinct but related components i.e., cognitive, evaluative and emotional, which exert different effects on key outcome variables (Ellemers et al., 1999). Since we are interested in organizational identification as a motivational force that enables knowledge exchange among organizational members, we define organizational identification as a member’s sense of emotional involvement with the group2 (Bergami & Bagozzi, 2000; Ellemers et al., 1999: 372).

Following this reasoning, we argue that whatever the network structure of an actor, others’ perception of its organizational identification will affect the inward knowledge ties. As a consequence, actors’ organizational identification is positively associated with their degree centrality in the intra-organizational knowledge exchange network.

Perceived organizational prototypicality and knowledge exchange

According to Turner et al. (1987: 2), “the fundamental idea is that group behaviour is the behaviour of individuals acting on the basis of a categorization of self and others at a social, more ‘inclusive’ or ’high’ order level of abstraction.” Self-categorizations are organized into a hierarchical system of classification in a way that individuals can categorize themselves at different level of abstraction such as the personal level, the intermediate or group level, and the super-ordinate level (Turner, 1985). In fact, higher-order identities include or encompass lower-order identities (Kramer, 1993). Compared to higher-order groups (such as organizations),

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2 The distinction between different conceptualization of identification, its antecedents and consequences have been widely discussed (see Edwards, 2005; van Dick, 2001). See also, van Knippenberg & Sleebos (2006) for a focus on the differences between organizational identification and organizational commitment.
lower-order identities (such as departments) are by definition more idiosyncratic, smaller and
categorized by people who more likely to share values and interests (van Knippenberg & van
Schien, 2000: 140; Ashforth & Johnson, 2001: 36). As a result, people sharing lower-order
identities are more likely to be connected by the virtue of advice and solution networks since
members typically experience the resolution of work-related problems and the need to exchange
job-related resources.

For these reasons, we consider individuals’ prototypicality at the lower-level (firm’s
departments in our research setting). Thus, we define “prototypical members” as the actual
members who best embody a department prototype and so they personify and prescribe the set of
beliefs, attitudes, feelings and behaviours of the department (e.g. Terry & Hogg, 1996). Within
groups, information on the prototype and who is most prototypical can be gleaned by simply
observing how people behave - what they do, how they dress, what they say, and so forth (Terry
& Hogg, 1996). Finally, it is worth noting that the attributes that contribute most to perceptions
of prototypicality are likely to vary from group to group and the general social context (Turner &
Haslam, 2001).

As suggested, the definition of oneself (and others) resulting from membership
influences the position and structure of the interpersonal relationships that the individual has
within the social context (e.g., Mehra, Kilduff & Brass, 1998). This is because social
categorization depersonalizes the perception of people - they are not viewed as unique
individuals but as embodiments of the attributes of their group. Individuals in these groups will
thus see their members as a credible and reliable source of information on their activities and
who can be accessed for both advice and guidance (Haslam, Powell & Turner, 2000; Hogg,
2001; Van Knippenberg, 2000). The empirical works of Hogg and colleagues offer support to
this argument. For example, Hogg and Hardie (1991) found that the member’s perceived
prototypicality of the team was more associated with the selection of these members and their
popularity (see also, Hogg, Cooper-Shaw & Holzworth, 1993; Hogg, Hardie & Reynolds, 1995) based on both social processes and interpersonal attraction and thus on their level of similarities and prototypicality (Hogg & Hains, 1996, 1998).

We argue that people actively seek and make judgments about one’s own and other members’ prototypicality (e.g., Haslam, Oakes, Turner & McGarty, 1995) and that this process influences the choice of whom to turn to for knowledge exchange. Particularly in contexts of tacit knowledge, organizational prototypicality might be perceived as a proxy of holding useful knowledge. As a result, individual perceived as prototypical will attract over time an abnormal rate of inward knowledge access and requests. This may also occur since highly prototypical group members endorse the group’s identity and are, therefore, socially attractive. Following the above reasoning, we argue that actors’ perceived prototipicality is positively associated with their centrality in the knowledge exchange network.

An empirical test

We offer a preliminary evidence of our theory using data on a European mid-sized car racing chassis manufacturer in a variety of classes with a balance sheet of 56 million euro at the end of 2009, and net profits of 8 million euro. Data were collected as a part of a larger survey administered to all 190 employees with the aim of understanding some aspects in relation to members’ perceptions of organizational and work characteristics, knowledge sharing behaviours and social relationships among members. A “roster” and “free-choice” question format was used (e.g., Wasserman & Faust, 1994). Respondents were provided with a complete directory of company employees divided by function and sorted alphabetically. Each employee had a unique code. For each network question, employees were instructed to indicate up to 20 preferences from that list and to use the corresponding personalized code to prevent errors and facilitate data entry. The network survey included fours items - work communication (Burkhardt & Brass,
1990), task advice (Brass, 1984), solution (Cross Borgatti & Parker, 2001) and friendship (Ibarra, 1993) - all measured with a binary response scale. Demographic information including gender, education, functional membership and tenure obtained from the human resource management department. Finally all the variables included in this study are reported in table 1.

Sample

A total of 182 out of 190 employees filled out the survey (96 percent of the population), which took on average 70 minutes to complete. Eight employees either declined to participate or were not at the company during the data collection period. Fifteen incomplete surveys were excluded, yielding a final 88 percent response rate. Respondents were predominantly male (89 percent, N=149), with an average age of 38.8 years (ranging from 19 to 63.5). Organizational tenure ranged from 5 months to 37.5 years, with an average of 8.1 years. Departmental membership was comparable across the population: 26.9 percent of the sample (N=45) were affiliated with the production department, 24 percent with the design department, 18.6 percent with the aerodynamics department and 6 percent with R&D. There were no significant differences between respondents and non-respondents along any of these variables.

ANALYSIS AND RESULTS

We tested our predictions with ordinary least squares regression models with robust clustered errors\(^3\). Table 2 shows the results of the semi-logarithmic regression models predicting individuals’ knowledge exchange ties. The aim is to show the impact of organizational identification and perceived alters prototypicality above and beyond the effect of well known

\(^3\)Since the knowledge exchange dependent variable is bounded, we also checked the robustness of our results using a Tobit specification (Tobin, 1958), which yielded entirely comparable results. For ease of interpretation, we report the results from the OLS models. Moreover, in order to explore the independence between social network and social identity mechanism, we ran several interaction effects among networks and social identity variables included in the model and among the two groups of variables themselves. We also estimated models with interactions between the main social capital effects and perceived alters prototypicality to check for potential interaction effects even though not hypothesized. Moreover, we interacted the main social capital effects between themselves, and we did the same for social identity and categorization variables. The empirical results did not show any effects for such interactions. Results are available from the authors upon request. Finally, in results to be presented, we reach the same conclusions if we estimate models that also control for education level. We present our results using the more parsimonious specification to conserve space in our tables.
variables considered in the empirical literature. In fact, according to Argote, McEvily and Reagans (2003) theoretical framework, the statistical model includes seven control variables (model 1) in relation to the actors’ properties (gender, organizational tenure, executive rank, department affiliation, knowledge sharing vision, psychological safety) and a control variable for the properties in relation to the knowledge they have (knowledge codifiability). Because the social capital framework (Nahapiet & Ghoshal, 1998) is the most widely used in the network literature addressing knowledge exchange in and among organizations (e.g., Brass, 2010; Hansen, 1999; Moran, 2005; Oh, Chung & Labianca, 2004; Reagans & Mcevely, 2003; Rodan & Galunic, 2004; Tsai & Ghoshal, 1998), Model 2 to 4 also control for the effects of structural (i.e., Communication network centrality), relational (i.e., Relational Consistency) and cognitive dimension (i.e., Tie Heterogeneity) of social capital.

Models 5 to 6 show the results for our organizational identification and prototypicality mechanisms. While model 5 shows no support for the positive association between organizational identification and the centrality in knowledge exchange, in Model 6 results corroborate the expected positive relationship between perceived alters prototypicality and actor’s prominence in the knowledge exchange network. Moreover, by introducing perceived prototypicality the variance explained by the model increases significantly. Overall, the full model contributed up to 20% in explaining the likelihood of actor’s knowledge exchange in organization.

**DISCUSSION**

In their review of social networks research, Kilduff and Tsai (2003) called for the inclusion of individual attributes as researchers explore network emergence, evolution, and
properties, particularly in relation to the multiple and complex ties between people in the network. Answering this important call, this study has tried to make progress on our understanding of knowledge exchange processes within organizations by disentangling the role of social identity and social categorization in influencing the formation of knowledge exchange ties.

Our theory, supported by the empirical results, show that being perceived as prototypical members is a source of prominence in knowledge exchange that operates beyond preexisting communication or affective relationships. Put differently, self-categorization process produces - through depersonalization - a positive attitude among the members which represents an autonomous mechanism of social attraction for knowledge exchange (Terry & Hogg, 1996), while social networks mechanisms are triggered by interpersonal attraction. Moreover, our arguments clearly suggest that the inclusion of the categorization process in terms of perceived member’s prototypicality allow us to avoid a potential spurious relationship in assessing the role played by social identity and categorization theory in explaining attitude and behaviors.

In fact, contrary to our theorization and to the recent works in organizational learning and knowledge management (Darr et al., 1995; Ingram & Simons, 2002; Kane, 2010; Kane et al., 2005; Van Der Vegt & Burdenson, 2005), we did not find any direct or moderating impact of organizational identification on actors’ knowledge exchange behavior. One of the reasons of this inconsistency is that previous research did not directly measure organizational identification (with some notable exceptions such as Van Der Vegt & Burdenson, 2005) by implicitly assuming that sharing a superordinate identity can contribute to develop a transactive memory system (Kane, 2010). In sum, our research offers a deeper explanation of the drivers of knowledge exchange ties by pointing out the role of actors’ perceived prototypicality.

Following this promising vein, future research should address how other characteristics of knowledge such as complexity and relevance and the knowledge overlap between source and
recipient may alter the way in which different dimensions of social capital and identification (i.e. evaluative dimension) shape actors’ prominence and influence in the knowledge exchange network. Moreover, researchers should explore how different targets of identification (e.g. profession, workgroup, department and organization) interplay in affecting the source and recipient willingness to exchange and absorb knowledge. Future work on knowledge exchange could also increase the generalizability of these results to context characterized by team-based project such as consultant firms and using different measures of social capital and organizational identification. Because we theorize that the perception of members’ prototypicality will affect the position of individuals within the networks, a further suggestion will be to use individuals trait-like predisposition such as self-monitoring, agreeableness etc (e.g., Mehra et al., 2001; Klein, Lim, Saltz & Mayer, 2004) to control for alternative explanations.

Additionally, there are few studies with controversial results that address the relationship between social identity and social networks in organization (e.g., George & Chattopadhyay, 2005; Rao, Davis & Ward, 2000). These open avenues for future work trying to clarify both theoretically and empirically such relationships. For example, research should investigate the boundary conditions that help clarifying when interpersonal relationships may influence individuals’ degree of organizational identification. Taking a functional perspective on group membership (Vignoles, Regalia, Manzi, Golledge & Scabini, 2006) personal networks can be conceived as resources to fulfil important individuals’ needs (in particular need for affiliation, achievement, self-esteem, self-verification). In that sense organizational identification can be considered an outcome of the fulfilment of such needs (e.g., Riketta, 2008). A basic question thus could be which contents and network structures are able to influence an individual’s degree of identification. More intriguing speculations may concern the possibility to match different contents and structures with different targets and dimensions of identification or to consider the potential moderator effect of the composition of a personal network (e.g., the presence of people
with higher hierarchical position, social status, or recognized as more prototypical) in such relationship.

Moreover, social identity research should explore potential antecedents of perceived organizational prototypicality as well as explicitly address the relationship between organizational prototypicality and organizational identification (e.g., Hogg & Terry, 2000; Monti, 2010; Monti & Bergami, 2011) and well-studied antecedents such as perceived organizational identity, construed external image or prestige (Albert & Whetten, 1985; Dutton, Dukerich & Harquail, 1994). As an example, we can speculate that an individual’s perceived prototypicality could potentially moderate the relationship between the attractiveness of an organizational identity (i.e., perceived organizational identity) and his / her degree of identification. An argument can be that people who consider themselves as prototypical member, in the case of organization characterized by positive identity, would be more identified compared to those that are not prototypical because it potentially boost the satisfaction of self-esteem needs.

Because perceived members’ prototypicality is strictly linked with the identity of the organization, we can argue that a measure mapping the clarity or perceived certainty of the organizational identity could be considered a direct antecedent. To our knowledge there is no measure developed for such purpose. An alternative could be to adjust others conceptually similar measures (Hogg & Hardie, 1991; Hogg & Hains, 1996). However a theoretical clarification of the distinction between such related concepts is the first step to develop appropriate measurement instruments.

The concept of perceived prototypicality could also be of interest for researcher studying cognitive social networks (Krackhardt, 1987) and their accuracy (Casciaro, 1998). These perceptions of informal relationships form individuals’ mental maps of the social world that influence how people behave in the network and thus it might be important for outcomes such as
team performance and job evaluation. Because people actively seek and make judgments about one’s own and other members’ prototypicality, we argue that such perceptions may influence the selection of information and thus the accuracy of individual’s mental maps. In particular it is likely that non prototypical members will have a better cognition of the relationships of prototypical members than of non prototypical ones because they are “object” of screening as they personify and prescribe the set of beliefs, attitudes, feelings and behaviours of organization.

Along the same line, being able to “spot” who are the prototypical members in an organization can also be useful - both from a theoretical and managerial point of view - in studies addressing organizational change (Sonenshein & Dholakia, 2012) and employer branding (Edwards, 2009).

Finally it is important that researchers use multilevel-multimethod design and methodologies that allow the variables to mutually influence one another. Such approach would require - for example - a longitudinal study using data collection methods that provide bold descriptions (e.g., surveys, interviews, observations). Being able to answer to some of those questions - involving on one hand the non-independence of the observations and the possibility to combine together relational data and attributes – would preferable require the use of models known as Exponential Random Graph Models (Robins Snijders, Wang, Handcock & Pattison, 2007) or social relations model (Kenny, Mohr & Levesque, 2001).

We trust that our theory development, our findings and the suggestions for future research spur further investigations of this neglected, but important, topic able to shed new lights both in social identity and categorization, and in social network literature providing a complementary explanation of relationship formation and their structural configurations.
References


Kane, A. A. 2010. Unlocking Knowledge Transfer Potential: Knowledge Demonstrability and Superordinate Social


European Journal of Social Psychology, 38: 715-735


Table 1.  
Items and internal consistency of measures*

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Measures</th>
<th>N items</th>
<th>$\alpha$ (alpha)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Knowledge exchange</strong></td>
<td>Knowledge exchange between two members of the organization is defined as a relationship in which both partners provide, and at the same time acquire, knowledge from the other party.</td>
<td></td>
<td><strong>-</strong></td>
<td>Monti &amp; Soda (2012)</td>
</tr>
<tr>
<td><strong>Communication network centrality</strong></td>
<td>Represent the structural dimension of social capital. We proceed to symmetrise the adjacency matrix relating to the communication network, replacing the value of the Xij and Xji cells with min(Xij, Xji) and thereby only taking into account reciprocate relations.</td>
<td>20†</td>
<td><strong>n.a.</strong></td>
<td>Burkhardt &amp; Brass (1990) ASQ</td>
</tr>
<tr>
<td><strong>Relational Consistency</strong></td>
<td>Represent the relational dimension of social capital. Conceptually, relational consistency represents the degree of structural equivalence (Pearson Correlation) of the same individual on two different networks (i.e., communication and friendship network)</td>
<td></td>
<td><strong>-</strong></td>
<td>Soda &amp; Zaher (2012) ASQ</td>
</tr>
<tr>
<td><strong>Tie heterogeneity</strong></td>
<td>Represent the cognitive dimension of social capital. Based on one actor’s functional membership, tie heterogeneity is defined as the degree of diversity of an actor links with members belonging to different organizational functions.</td>
<td></td>
<td><strong>-</strong></td>
<td>Reagans &amp; McEvily (2003) ASQ</td>
</tr>
<tr>
<td><strong>Organizational identification</strong></td>
<td>Affective dimension. As an example, the first item asked, “How attached are you to [Company]?” and was measured on a seven-point scale.</td>
<td>2</td>
<td><strong>0,89</strong></td>
<td>Bergami &amp; Bagossi (2000) BJSP, Bagossi &amp; Lee (2002) SPQ</td>
</tr>
<tr>
<td><strong>Perceived Alters Prototypicality</strong></td>
<td>The extent to which a members is perceived to be a typical and exemplary representative of a social category, that is the attributes, the values, the way of being and behaving of that social category</td>
<td></td>
<td><strong>-</strong></td>
<td>Monti (2010)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td>Dummy variable which takes the value 1 if the individual is female and 0 if male.</td>
<td></td>
<td><strong>-</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Organizational tenure</strong></td>
<td>Continuous variable expressing the number of years in the company</td>
<td></td>
<td><strong>-</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Executive rank</strong></td>
<td>Dummy variable that takes the value 1 if the individual has executive responsibilities, and 0 if they have managerial responsibilities</td>
<td></td>
<td><strong>-</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Department affiliation</strong></td>
<td>Dummy variables for each department, with “Aerodynamics” as the omitted variable, valued 1 in the case of affiliation and 0 otherwise.</td>
<td></td>
<td><strong>-</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge sharing vision</strong></td>
<td>As an example, the first item stated, “Members in the organization share the vision of helping others solve their professional problems” and was measured on a seven-point scale.</td>
<td>3</td>
<td><strong>0,81</strong></td>
<td>Adapted from Chiu, Hsu &amp; Wang (2006)</td>
</tr>
<tr>
<td><strong>Psychological safety</strong></td>
<td>The extent to which respondents felt that the organization and their own department made them feel safe in taking risks and tolerating mistakes in experimentations</td>
<td></td>
<td><strong>-</strong></td>
<td>Based on Edmondson (1999)</td>
</tr>
<tr>
<td><strong>Knowledge codifiability</strong></td>
<td>As an example, the first item stated, “A useful manual or document describing my area of expertise could easily be written” and was measured on a seven-point scale.</td>
<td>4</td>
<td><strong>0,83</strong></td>
<td>Adapted from McEvly &amp; Reagans (2003)</td>
</tr>
</tbody>
</table>

* When not indicated we use the very same measures referred in the last columns of the table. We report items for only one of the two targets mapped in the study. Additional information about correlations among variables can be provided upon request.
1 20 represent the maximum number of preferences. Respondents were provided with a directory list of the company’s members divided according to their functional membership and sorted alphabetically.
‡ n.a. — Not applicable
### TABLE 2

Results of Semi-logaritimic Regression Analyses Predicting Knowledge Exchange Ties\(^\text{b}\)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sex (female)</td>
<td>-0.01 (0.39)</td>
<td>-0.11 (0.34)</td>
<td>-0.11 (0.34)</td>
<td>-0.25 (0.34)</td>
<td>-0.23 (0.34)</td>
<td>-0.18 (0.34)</td>
</tr>
<tr>
<td>2. Organizational Tenure</td>
<td>0.05*** (0.01)</td>
<td>0.05*** (0.01)</td>
<td>0.05*** (0.01)</td>
<td>0.05*** (0.01)</td>
<td>0.05*** (0.01)</td>
<td>0.04*** (0.01)</td>
</tr>
<tr>
<td>3. Managerial responsibility</td>
<td>-0.88*** (0.24)</td>
<td>-0.36 (0.22)</td>
<td>-0.41 (0.22)</td>
<td>-0.31 (0.22)</td>
<td>-0.30 (0.22)</td>
<td>-0.22 (0.22)</td>
</tr>
<tr>
<td>4. Administration</td>
<td>1.31* (0.57)</td>
<td>1.37** (0.50)</td>
<td>1.25* (0.50)</td>
<td>1.01* (0.50)</td>
<td>0.97 (0.51)</td>
<td>1.20* (0.50)</td>
</tr>
<tr>
<td>5. Sales</td>
<td>1.55** (0.49)</td>
<td>1.40** (0.43)</td>
<td>1.31** (0.43)</td>
<td>0.98* (0.44)</td>
<td>0.95* (0.45)</td>
<td>1.21** (0.45)</td>
</tr>
<tr>
<td>6. Management &amp; Quality Control</td>
<td>0.99 (0.87)</td>
<td>1.47 (0.76)</td>
<td>1.54* (0.76)</td>
<td>1.15 (0.77)</td>
<td>1.24 (0.79)</td>
<td>1.74* (0.79)</td>
</tr>
<tr>
<td>7. General Management</td>
<td>0.18 (0.78)</td>
<td>0.87 (0.69)</td>
<td>0.71 (0.69)</td>
<td>0.46 (0.69)</td>
<td>0.41 (0.70)</td>
<td>0.72 (0.69)</td>
</tr>
<tr>
<td>8. Operation</td>
<td>0.84* (0.39)</td>
<td>0.73* (0.34)</td>
<td>0.77* (0.34)</td>
<td>0.56 (0.35)</td>
<td>0.52 (0.36)</td>
<td>0.66 (0.36)</td>
</tr>
<tr>
<td>9. Production</td>
<td>-0.10 (0.28)</td>
<td>0.20 (0.25)</td>
<td>0.15 (0.25)</td>
<td>0.11 (0.25)</td>
<td>0.07 (0.26)</td>
<td>0.22 (0.26)</td>
</tr>
<tr>
<td>10. Design</td>
<td>0.10 (0.28)</td>
<td>0.37 (0.25)</td>
<td>0.32 (0.25)</td>
<td>0.07 (0.27)</td>
<td>0.06 (0.27)</td>
<td>0.18 (0.27)</td>
</tr>
<tr>
<td>11. R&amp;D</td>
<td>0.60 (0.43)</td>
<td>0.43 (0.38)</td>
<td>0.32 (0.38)</td>
<td>0.06 (0.39)</td>
<td>0.06 (0.39)</td>
<td>0.26 (0.39)</td>
</tr>
<tr>
<td>12. Human Resources</td>
<td>-0.35 (0.86)</td>
<td>-0.24 (0.75)</td>
<td>-0.15 (0.75)</td>
<td>-0.52 (0.75)</td>
<td>-0.57 (0.76)</td>
<td>-0.13 (0.76)</td>
</tr>
<tr>
<td>13. Information System</td>
<td>1.65** (0.53)</td>
<td>1.54** (0.46)</td>
<td>1.39** (0.46)</td>
<td>0.97 (0.49)</td>
<td>0.96 (0.50)</td>
<td>1.20* (0.49)</td>
</tr>
<tr>
<td>14. Knowledge sharing vision</td>
<td>-0.09 (0.82)</td>
<td>-0.06 (0.07)</td>
<td>-0.04 (0.71)</td>
<td>-0.06 (0.07)</td>
<td>-0.07 (0.74)</td>
<td>-0.04 (0.07)</td>
</tr>
<tr>
<td>15. Psychological safety</td>
<td>0.20 (0.13)</td>
<td>0.09 (0.12)</td>
<td>0.13 (0.12)</td>
<td>0.13 (0.12)</td>
<td>0.12 (0.12)</td>
<td>0.12 (0.21)</td>
</tr>
<tr>
<td>16. Knowledge codifiability</td>
<td>-0.25** (0.08)</td>
<td>-0.19* (0.07)</td>
<td>-0.20** (0.07)</td>
<td>-0.21** (0.07)</td>
<td>-0.21** (0.07)</td>
<td>-0.18* (0.07)</td>
</tr>
<tr>
<td>17. Communication network centrality</td>
<td>0.16*** (0.02)</td>
<td>0.14*** (0.02)</td>
<td>0.13*** (0.03)</td>
<td>0.13*** (0.03)</td>
<td>0.10*** (0.03)</td>
<td></td>
</tr>
<tr>
<td>18. Relational Consistency</td>
<td>1.09* (0.53)</td>
<td>1.20* (0.53)</td>
<td>1.21* (0.53)</td>
<td>1.15* (0.52)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Tie Heterogeneity</td>
<td>0.90* (0.40)</td>
<td>0.85* (0.41)</td>
<td>0.78* (0.39)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Organizational Identification</td>
<td>0.04 (0.08)</td>
<td>0.03 (0.08)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Perceived alters prototypicality</td>
<td>0.08** (0.03)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.24 (0.51)</td>
<td>-1.71** (0.50)</td>
<td>-2.00*** (0.51)</td>
<td>-2.21*** (0.51)</td>
<td>-2.30*** (0.54)</td>
<td>-2.70*** (0.55)</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.38</td>
<td>0.53</td>
<td>0.54</td>
<td>0.56</td>
<td>0.56</td>
<td>0.58</td>
</tr>
<tr>
<td>(\Delta \chi^2)</td>
<td>81.28***</td>
<td>44.99***</td>
<td>4.61*</td>
<td>5.83*</td>
<td>0.32</td>
<td>8.11***</td>
</tr>
<tr>
<td>(F)-test</td>
<td>5.88***</td>
<td>9.90***</td>
<td>9.78***</td>
<td>9.81***</td>
<td>9.28***</td>
<td>9.56***</td>
</tr>
</tbody>
</table>

\(^{\text{b}}\) n= 167. Values represent unstandardized coefficients; robust standard errors are in parentheses.

* p < .05  ** p < .01  *** p < .001

\(^{\text{c}}\) The chi-square change for model 1 is derived from comparing the given model with a constant-only model.