SALES NETWORK: CONTENT AND STRUCTURE

Autoria: Danny Pimentel Claro, Gabriel Gonzalez, Sílvio Abrahão Laban Neto, Priscila Borin de Oliveira Claro

Abstract
Combining relationship selling and social capital theory, the authors examine the characteristics of intrafirm social networks established by salespeople that impact performance. Four key social capital characteristics, that have direct implications for a salesperson’s ability to manage relationships with customers, were studied grouped in structure: density, bridging network; and content: diversity and multiplexity. Whole network data (507 employees) was collected from an agricultural input vendor with 23 divisions. Estimates from a sample of 101 salespeople of the vendor revealed that structure and content influence positively sales performance. Interaction effects between content characteristics and between structure characteristics showed that salespeople with local density and global bridging achieve high performance either in the short and long run.

Introduction
Marketing scholars have increasingly recognized the need for salespeople to possess sophisticated knowledge about their firm’s capabilities and competitive advantages in order to identify opportunities and approaches for creating customer value (Weitz and Bradford 1999). As customer problems become more complex and heterogeneous, salespeople must also be able to coordinate the efforts of individuals needed to effectively serve customers and manage relationships (Moon and Armstrong 1994). The salesperson’s ability to garner more and better sales resources from coworkers has been shown to directly impact sales performance (Plouffe and Barclay 2007). More specifically, research suggests that a salesperson’s ability to leverage their firm’s relational information processes in order to gain and subsequently exchange with customers the expertise and competencies of their firm, significantly impacts the value received by both the buyer and the seller (Jayachandran, et al. 2005; Palmatier 2006). Consequently, sales researchers have noted the need for more research that identifies the activities that salespeople engage in to form intra-organizational relationships (e.g. via social networks) to gain access to needed resources possessed by others in their firm (Workman, Homburg, and Jensen 2003).

The goal of our paper is to investigate relationship selling through the lens of social capital theory. Intrafirm social capital is the social structure created within the firm, resulting in a network of interpersonal ties, by a salesperson in order to secure resources for the purpose of providing value to and managing relationships with customers (Coleman, 1990). Salespeople draw on the contributions of diverse intrafirm network members in order to: 1) understand their firm’s capabilities and what it can do for their customers, and 2) motivate exchange with individuals who can provide the resources needed to fashion customer solutions (Jones et al., 2005a; Weitz and Bradford, 1999). Our framework centers on four key social capital characteristics that have direct implications for a salesperson’s ability to manage relationships with customers. These include two network structure characteristics (dense and bridging structures) and two network content characteristics (multiplex and diverse ties).

Network density and bridging have been the primary concepts for studying the topology of an individual’s network of social ties, and this extant literature is mixed on how these different structural configurations might influence a salesperson’s performance. Research demonstrates that access to members in a dense network, especially through close ties, positively impacts sales manager performance (Moran 2005). However, the classic finding on boundary-spanning positions implies that highly effective salespeople serve as bridges between poorly connected
others, playing a brokerage role in the flow of information between intrafirm units and the customer (Burt 2007). More recently, marketing scholars have proposed that in order to create effective solutions for customers, salespeople must build intrafirm sales networks that are both sparse and dense (Üstüner and Godes 2006). The results from this research study help to clarify these contradictory perspectives as they apply to intrafirm sales networks and salesperson performance.

Intrafirm Sales Network

The intrafirm sales network is formed by salespeople and other organizational actors who have control over resources (i.e. information) and interests in certain resources and outcomes. This network comprises the direct and indirect contacts that the salesperson draws on to bring precious and rare technical knowledge to the customer, and for coordinating the efforts of disparate organizational members in order to create effective solutions for customers (Üstüner and Godes 2006). While studies utilizing the social network perspective are vast, research that is concerned mostly with the consequences of social networks falls under the area of social capital (Van den Bulte and Wuyts 2007). Based on Coleman’s (1988) conceptualization, the intrafirm sales network facilitates salesperson action for achieving performance and managing relationships by providing social capital. Social capital, or the aspects of the intrafirm sales network structure that facilitate goal attainment, constitutes a particular kind of resource available to the salesperson (Coleman 1990). Social capital garnered by the salesperson is productive, making possible the achievement of performance goals that in its absence would not be possible (Adler and Kwon, 2002).

The central implication for managing customer relationships is that some networks and network positions confer more advantages to salespeople than others (Van Den Bulte and Wuyts, 2007). Generally, the benefits that the intrafirm sales network provides include: access to information, improved coordination, control over the flow of information and resources, and status that allows the appropriation of resources (Burt 1992; Van Den Bulte and Wuyts 2007). Specific to managing customer relationships, a salesperson’s position in the intrafirm sales network produces information and coordination benefits that can be leveraged to create customer value (Adler and Kwon, 2002). This is especially true as personal selling continues to evolve toward customer advocacy where the primary responsibility is identifying and providing customer value by relating to a wide variety of individuals with diverse expertise and skills within the firm (Jones et al. 2005a). Moreover, intrafirm network interactions can influence a wide range of important salesperson consequences including performance, job satisfaction, power, career advancement, turnover, and unethical behavior (Brass, Galaskiewicz, Greve, and Tsai 2004).

But how do intrafirm sales networks provide the benefits central to key relationship management outcomes? Research in marketing and management suggest that the sources of social capital lie in the structure and content of the salesperson’s intrafirm relations (Adler and Kwon 2002; Van Den Bulte and Wuyts 2007). Accordingly, marketing scholars have recently suggested several social capital sources as central to the study of marketing and relationship management (Antia and Frazier 2001; Palmatier 2008a). These include varying structural patterns of the network, the diversity of resources held by network members, and the kinds of relations maintained between network members (Van Den Bulte and Wuyts, 2007).

Structure is the configuration in which firm members are connected in the sales network. Structure comprises not only the direct connections that the salesperson has with network
members but the indirect ties salespeople have with all members of the network. The structure of an intrafirm sales network creates opportunities for resource exchange, and impacts a salesperson’s access to firm resources (Adler and Kwon 2002). The resources possessed by members of the sales network represent a member’s ability to assist the salesperson with specific tasks. These resources are the competencies and expertise embedded within the organization (Adler and Kwon 2002). A salesperson can maintain many different kinds of relations with members of their organization including: advice, friendship, hierarchical authority, and mentorship. Different kinds of ties are assumed to function differently and employ different motivations for exchanging resources, from purely instrumental to more normative commitments such as generalized reciprocity or shared interests (Adler and Kwon 2002). We center on two kinds of ties within the sales network, task-advice and friendship. Task-advice relations represent the instrumental ties within the sales network, or the ties from which salespeople solicit and receive resources relevant to their work (Krackhardt 1990). Friendship relations are a free-set, or open-ended support tie that provide a broad range of social support (Krackhardt and Stern, 1988).

**Network Structure: Dense v. Bridging Networks**

We center on the structure of a specific kind of instrumental relation in the sales network, the task-advice tie. Advice relations have been demonstrated to be rooted in job interdependencies where workflow inputs/outputs and financial support is exchanged on a position-to-position basis, induced by organizational structure (Podolny and Baron 1997). Dense and bridging configurations have been conceptualized as opposing views of the optimum structure of a salesperson’s intrafirm advice relations for mobilizing cooperation, and the opportunities for gaining novel information needed by the salesperson for managing customers. Dense networks are closed, in which a salesperson’s advice contacts are themselves directly connected and highly cooperative (Coleman 1988). Bridging networks are characterized by structural holes or sparseness, where the salesperson spans separate and unconnected parts of the network, gaining access to specialized and novel information (Burt 1992). To address these contradictory views of network structure, we develop competing hypotheses for explaining salesperson performance that first set a dense network structure in direct opposition to a bridging network structure, and then combine a dense structure with a bridging one.

Density depends on two elements: trustworthiness of the social environment – or probability that obligations will be repaid – and the actual extent of social norms (Coleman, 1988). These densely knit networks facilitate the mobilization of support and resources as common third parties maintain the emergence and enforcement of norms. In this way, network density leads to high redundancy of information, as everyone is connected to everyone else, assuring that individuals are sharing information and resources with all other members in the network (Coleman 1990). Moreover, social norms arise as salespeople attempt to limit negative external effects and/or encourage positive ones. For example, increased levels of network density have been proposed to provide constraints on unethical behavior targeted to the salesperson from others within their firm (Seevers, Skinner, and Kelley 2007).

Density of the social structure is important not only for the existence of effective norms but also for another form of benefit: trustworthiness that allows the proliferation of obligations and expectations. Research implies that salespeople with dense networks may be better able to motivate their contacts to exchange for resources as density fosters identification with the group (Portes and Sensenbrenner 1993). Furthermore, salespeople may need to rely more on closed
networks for appropriating the resources possessed by intrafirm members, as they result in increased levels of trustworthiness and reduce the amount of tensions or distractions between network members (Moran 2005). Finally, a meta-analysis of group performance and network structures found that teams with more dense instrumental ties, and thus higher levels of information sharing, achieved higher performance (Balkundi and Harrison 2006). Therefore:

**H1: Salespeople with dense task-advice sales networks achieve higher performance.**

As the degree of interdependency in sales tasks has increased, the performance of a salesperson has become dependent on the ability to form a bridge across disparate functional units in order to access needed knowledge, skills, and ability (Jones et al. 2005a; Weitz and Bradford 1999). A bridging network is characterized by a configuration exhibiting structural holes, or gaps in information flow between clusters of unconnected people. A structural hole between two groups means that some people are not connected to or are unaware of others (Burt 1992). Bridging nets separate non-redundant sources of information, sources that are more complementary than overlapping. A key assumption underlying the influence of bridging structures is the opportunity for the salesperson to participate in and take control of the information sharing process.

Research suggests that control benefits represent a brokerage opportunity, as salespeople can influence when otherwise unconnected actors are brought together, resulting in outcomes preferred by the salesperson (Burt 2007). The extent to which a salesperson has an information advantage or access to novel information depends on their ability to bridge structural holes, or uniquely span separate parts of their network (Burt 1992). Salespeople connected across structural holes may have access to new ideas because of the variety of their contacts, providing multiple interpretations of the same events, and cross-validation of information for more reliable knowledge (Regans and McEvily 2003). The holes among a salesperson’s contacts mean that she can broker communication while displaying varying beliefs and identities to each contact. A salesperson in a bridging position can influence the group by withholding or distorting information in transmission (Frenzen and Nakamoto 1993). Finally, control over joint projects can facilitate a salesperson’s gain in visibility, faster promotion, and above average performance (Brass, Galaskiewicz, Greve, and Tsi 2004). Therefore:

**H2: Salespeople with bridging task-advice sales networks achieve higher performance.**

A salesperson’s need to rely on others for the unique ideas and resources they possess in order to manage customer relationships, places on them the burden to simultaneously access the specialized resources possessed by disparate network members while motivating cooperation among the same individuals (Üstüner and Godes 2006). A recent discussion in the social capital literature, centered on the contrasting benefits of dense and bridging network structures, has direct implications for salespeople in this position. Inherent in this debate is the assumption that an action problem is created as bridging networks present opportunities for access to novel information but hinder coordinated action among dispersed, unconnected network members (Obstfeld 2005). Conversely, a problem in generating new ideas is found in dense networks that reduce the obstacles to coordinated action while concurrently creating barriers to novel information access because of information redundancy (Obstfeld 2005).

Recently, marketing scholars have proposed a rationale for combining dense and bridging network structures in order to improve salesperson performance. When creating solutions, a salesperson’s need for a diverse range of experts drives her to build a sparse set of intrafirm contacts, while simultaneously having to connect these far flung experts into smaller more dense networks in order to maximize their coordinated efforts (Üstüner and Godes 2006). Extant
research shows that resource combination is not achieved via a disunion strategy aimed at keeping disparate network contacts separate from one another, as in the bridging structure, but is reached through a union strategy designed to facilitate coordination between initially unconnected individuals or renew cooperation between previously connected network members (Obstfeld 2005). Research demonstrates that increased productivity results from knowledge transfer within firms that is facilitated by network structures composed of individuals who are part of a cohesive group representing wide ranging and diverse knowledge pools (Regans and McEvily 2003). Similarly, the ability of an alliance to reach its objectives is driven by the interaction of a bridging network structure with a structure composed of direct contacts that are strongly connected to one another (Tiwana 2008). Therefore:

**H3: In task-advice sales networks, a closed network structure moderates the effects of a bridging network structure on salesperson performance.**

**Network Content: Knowledge Diversity and Multiplexity**

The knowledge possessed by a salesperson’s intrafirm contacts is a key benefit of social capital. As customer relationship managers, salespeople need a broad and sophisticated understanding of their firm’s capabilities in order to identify opportunities and approaches for creating value propositions that integrate products, services, and applications (Jones et al. 2005a). Because solutions address a wide variety of customer needs, it is unlikely that the salesperson can garner the necessary knowledge from a single individual or from within their immediate workgroup in the firm. Üstüner and Godes (2006) argue that contacts must go beyond the sales department in order to leverage experts in other fields that have the ability to bring precious, hard-to-find knowledge to customers. From a network point of view, access to a diversity of information requires the salesperson to be connected to a diversity of actors or be located at the intersection of several knowledge domains (Van Den Bulte and Wuyts 2007).

Wide ranging networks, that cross organizational boundaries, have been demonstrated to be positively associated with the ease of knowledge transfer across distinct worldviews (Reagans and McEvily 2003). Moreover, limiting the number of ties with dissimilar others (between subunits) can promote them-versus-me thinking and prevent a salesperson from gaining the benefits of information diversity needed when faced with a crisis (Krackhardt and Stern 1988). Empirical research supports the notion that salespeople are more likely to achieve higher performance by maintaining a diverse set of intrafirm contacts. Salespeople, whose social network structure, exposes them to more heterogeneous or varied knowledge from within their firm may perform better on both routine and innovative tasks (Rodan and Galunic 2004). In addition, previous studies that have investigated the biotech industry (Powell, Koput and Smith-Doerr, 1996) and startups (Baum, Calabrese and Silverman, 2000) found that a diverse set of contacts proved to be beneficial for firm performance. Therefore:

**H4: Salespeople with more diverse task-advice sales networks achieve higher performance**

Scholars have long argued that single-purpose relations are less advantageous than multi-purpose relations (Stern 1979). The different kinds of relations salespeople maintain in the intrafirm sales network are motivated in different ways to exchange resources (Adler and Kwon 2002). Multiplex ties may be assessed as the tendency for two or more relations to occur together (Van Den Bulte and Wuyts 2007). Social network research has consistently studied two central types of relations: advice and friendship. Consequently, we focus on the effects of multiplex sales network ties, simultaneously advice and friendship, on salesperson effectiveness. Advice
ties represent the workflow-based relationships in the sales network (Krackhardt 1990). This type of relation acts as a donor of knowledge based on instrumental motivations such as career advancement, cost reduction, or competitive rivalry (Adler and Kwon 2002). The friendship tie, while not necessarily linked to the routine work done in the sales network, does capture important affective and social bonds that can drive trust (Brass 1984). Friendship exchanges are sources of shared identities (e.g. organizational) and social support, forged by “consummatory” motivations, or socialization based normative frameworks that guide collective action and bind communities (Podolny and Baron 1997).

Extant research suggests that multiplex ties represent robust relationships, based on trust, that are more conducive to knowledge transfer (Beckman and Haunschild 2002), and positively influence resource exchange and cooperation in the intrafirm sales network (Lazega and Pattison 1999). Relationship ties that are multi-dimensional are more stable than uniplex ties (e.g. work only), by making exit more costly, as losing a business associate may also result in the loss of a friend (Seevers, Skinner, and Kelley 2007). Multiplexity contributes to the “total” relational strength between salespeople and their intrafirm contacts, by imparting more opportunities to request support, provide support, and build positive valence (Van Den Bulte and Wuyts 2007). Moreover, multiplexity increases the number of ways that a favor can be reciprocated between salespeople and others in their network – advice for example can be repaid with a dinner, lunch or invitation to a social event. In addition, multiplex ties can provide a stronger voice for the salesperson within their firm, via relationship commitment, resulting in their business interests being more highly prioritized by network members (Aguilera and Jackson 2003). Finally, ties that go beyond arm’s-length relations and evolve into close friendships, have been shown to be critical to a firm’s market performance and long-term survival (Uzzi 1996). Therefore:

**H5: Salespeople with more multiplex relations in the intrafirm sales network achieve higher performance**

Scholars have indicated the need for caution in assuming that access to diverse knowledge automatically results in its appropriation by individuals (Rodan and Galunic 2004). A salesperson’s ability to transfer knowledge from diverse network members can vary, and may be based on the intimacy of interpersonal relations in the network (Szulanski 1996). The success of exchange may depend on the willingness of a donor to communicate valuable information. For example, arduous (i.e. laborious and distant) relationships could create friction in the transfer (Szulanski 1996). Research demonstrates that a firm’s ability to pay a lower price premium on acquisitions is highest when the firm’s partners have completed many diverse deals and represent multi-dimensional relations (Beckman and Haunschild 2002). While the logic is intuitive, scholars have noted the need to empirically test the moderating influence of relational quality characteristics like multiplexity on knowledge diversity’s impact on individual performance (Rodan and Galunic 2004). Therefore:

**H6: Intrafirm sales multiplexity moderates the influence of knowledge diversity on salesperson performance.**

In addition to social network variables, we intuitively expect that other factors may impact performance. The salesperson’s *age* might influence performance positively: one might suggest that with aging the salesperson gains experience and becomes better prepared for selling challenges. *Experience* or time working with the firm can impact performance by the same reasons as *age* and, additionally, salespeople more familiar with the firm’s procedures tend to learn and use more efficient ways to deal with the system. *Education* is also expected to have a positive impact on performance. Salespeople are required to engage in before and after sales
activities. Most of the activities are related to complex technical methods related to the products. We do not develop specific hypotheses for each of these three factors, though they are included in the model estimation as covariates.

Methodology

“Whole network” data, also referred to as census data, was collected from all 507 employees of a supplier of agricultural input products in Brazil. The mix of products comprises chemical, fertilizer, seed, irrigation equipment, animal feed, veterinarian drugs and general farm accessories. The firm purchases products from major national and international brands to sell in its shops to producers of agricultural goods (i.e. mainly soy, corn, coffee, sugar cane, dairy and cattle). Products are delivered to the client’s production plant. The supplier has its own private label brands in several lines of products: animal feed, fertilizer, and seed. Overall, the firm’s net sales for 2007 exceeded 300 million dollars, and the active customer base included over 1,100 clients. This supplier was selected because of the nature of the business, territorial coverage, and substantial number of salespeople.

In this business, information is critical. Salespeople are continuously consulted for technical advice. Salespeople visit clients in order to identify specific needs and bundle them with an array of products for the entire cycle of the clients’ production process. The supplier operates 23 divisions with stores spread geographically across four states. Divisions have infrastructure and inventory to conduct sales independently and compete with one another. Division general managers are in charge of operations and sales and are responsible for five to seven salespeople with internal (i.e. at the shop and by telephone) and external (i.e. visits to clients’ production site) activities. The firm encourages divisions and salespeople to regularly meet and share information with each other. For example, there is a monthly meeting with division managers to evaluate results and update operational and strategic issues. The commercial director oversees the divisions with the assistance of two business unit managers: the head of animal business and the head of agricultural business. In total there are 148 people involved with sales. Salespeople earn a fixed annual salary and commission based on their own annual net sales. There is also a commission based on the division’s annual net sales. To test our hypotheses, we considered the sub-sample of field and store salespeople, which included 101 individuals of the 507 employees of the company.

Research measures. Two objective performance measures were employed to avoid common method bias. The measure of individual sales (US$) is computed on the basis of the firm’s financial records from January through December of 2007. Sales Growth (US$) was calculated as the difference in dollar sales between 2005 and 2007.

The intrafirm sales network is a set of task-advice ties that provides technical and professional advice. The procedure to collect the network data employed a name generator questionnaire (Burt. 2007b). The following questions were asked of each firm employee: Whom do you go to for help or advice at least once a week? Whom do you talk to when you miss a work-related meeting? Whom do you look for to gather information for an important project? A similar procedure was utilized to identify each employee’s friendship network. The following questions were asked: Whom would you trust to confide your concerns about work-related issues? Whom would you invite to happy hour after a work day? We considered the first ten names in order to guarantee the relevance of the contacts mentioned by respondents (Burt, 1992). All names were entered in UCINET 6 to draw the intrafirm sales network and estimate the network variables. The intrafirm sales network variables are operationalized using four
measures: network density, bridging network, network diversity and multiplexity. These
variables are estimated on the basis of the overall network of the 507 employees of the company.

The measure for network density was calculated for the ego network of every salesperson,
including both inbound and outbound ties. The ego network refers to the ties of a given
salesperson, the individuals with whom the salesperson is directly connected, and the ties among
these individuals. This allows for the estimation of the number of ties received by a given
salesperson in the network and the number of ties initiated by a given salesperson. It also
considers the in-group ties, which are the ties that individuals connected with the salesperson
have with one another. To estimate network density we followed the procedure of Borgatti,
Everett and Freeman (2002). We computed the total number of ties and divided it by the total
number of pairs (potential direct ties and in-group ties) for a salesperson’s ego network.

The measure for bridging networks follows Burt’s (1992) constraint measurement that
captures the extent to which a salesperson’s contacts are redundant. Redundancy in the intrafirm
sales network results when the network around the salesperson constrains brokerage
opportunities to the degree that the network is directly or indirectly concentrated around the
salesperson. Put differently, a network exhibits bridging or hole-spanning characteristics when
there are no effective indirect connections between a salesperson’s intrafirm contacts.

Specifically, the index accounts for the extent to which a salesperson i’s network is directly or
indirectly invested in his or her relationship with contact j: \( c_{ij} = \left( p_{ij} + \sum p_{iq} p_{qj} \right)^2 \), for \( q \neq i,j \), where
\( p_{ij} \) is the proportion of salesperson i’s network relations that are invested in contact j (Burt,
1992). The total in parentheses is the proportion of salesperson i’s relations that are directly or
indirectly invested in connection with contact j. The sum of squared proportions, \( \sum c_{ij} \), is the
overall network constraint. The scores are multiplied by 100. As constraint refers to the
redundancy in the network and redundancy reduces the potential for bridges. The variable was
then multiplied by -1 to be transformed in positive. A positive impact of the variable bridging
networks on performance is expected.

Network diversity measures the multiplicity of information sources established by a
salesperson. As salespeople maintain ties with others in different departments (where 7 is the
total number of departments: Sales, Finance, HR, Logistics, IT, General management, and
Manufacturing), we calculated the index of qualitative variation (IQV). Marsden (1987) puts
forward IQV to measure egocentric network diversity. For \( i \)th salesperson with \( N \) ties, where the
ties are classified into \( K \) discrete categories (i.e. departments), IQV is \( \frac{1 - \sum p_j^2}{K - 1} \),
where \( p_j^2 \) is the proportion of alters in the \( j \)th categories. For example, a salesperson with 5 ties
in three different departments would score \( \frac{1 - \left( \frac{2}{5} \right)^2 + \left( \frac{2}{5} \right)^2 + \left( \frac{1}{5} \right)^2 \)}{(2/3)} = 0.96.

Multiplexity captures the multiple kinds of relationships between actors in a social
network (Van Den Bulte and Wuyts 2007). Guided by Mitchell’s (1969) conceptualization of
multi-layered networks, we inquired about the friendship network. While they were reporting
names for the advice network, we also asked respondents to identify the individuals with whom
they discuss personal or private matters or with whom they engage in activities with outside of
work. Multiplexity refers to the number of concurrent ties a salesperson has with people in the
advice network (i.e. with technical and professional advice purpose) and in a friendship context.
The number of concurrent ties was then divided by the total number of ties in the advice and
friendship networks to be included in the hypotheses testing.

We included six control variables. The measure for age represents the number of years
from the date of birth to the date of the data collection. The variable experience refers to the
number of years since the first day at work in the firm. We also included a variable to control for the education level considering the number of years the employee completed in school. This is a categorical variable ranging from analphabet (0) to graduate (8). The measure for team effect is the net sales of the individual minus the total sales of the division. There is a dummy variable for the kind of salesperson. We coded 1 for the salespeople that are primarily in charge of field sales (i.e. visits to clients in the field), while 0 represents salespeople that mainly stays at the shop. Office Headquarters represents the salespeople that sell or have an office in the firm’s headquarters. The correlations between the measures do not suggest problems of pairwise colinearity that would preclude the use of all constructs in the estimation.

Results

We mapped 1,943 ties in the network of 507 employees and 413 ties in the intrafirm sales network that contains the individuals that mentioned or were mentioned by the 101 salespeople. Figure 2 depicts the sociogram of the overall intrafirm sales network, representing the ties among 194 employees. The network reveals the concentration of ties around key experts. People like Heads of Business Units (#23 and #26), Commercial Director (#62), and supporting staff (Logistics Manager #295, Credit Manager #15, IT Manager #117 and Inventory Manager #50) are at the center of the network. This highlights the importance of commercial information and also shows the value of information from critical support positions within the network.

Figure 1: Intrafirm Sales Network

Table1 (on the next page) summarizes the results of ordinary least square regression analyses. Regression analysis allows for an evaluation of the degree (i.e. coefficient size), nature (i.e. coefficient sign) and optimization (i.e. coefficient of determination, $R^2$) of association between variables (Hair et al. 1998).
Table 1: Results of the regression analyses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Annual Sales</th>
<th>Sales Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1a 1b</td>
<td>Model 2a 2b</td>
</tr>
<tr>
<td>Age</td>
<td>.45** .31**</td>
<td>.46** .33**</td>
</tr>
<tr>
<td></td>
<td>(4.67) (2.76)</td>
<td>(4.78) (2.91)</td>
</tr>
<tr>
<td>Experience</td>
<td>-.12 -.14†</td>
<td>-.15 -.16</td>
</tr>
<tr>
<td></td>
<td>(-1.22) (-1.20)</td>
<td>(-1.45) (-1.33)</td>
</tr>
<tr>
<td>Education</td>
<td>.17 .10</td>
<td>.23* .19</td>
</tr>
<tr>
<td></td>
<td>(1.49) (0.78)</td>
<td>(1.68) (1.41)</td>
</tr>
<tr>
<td>Team Effect</td>
<td>.04 .01</td>
<td>.00 .06</td>
</tr>
<tr>
<td></td>
<td>(0.41) (-0.07)</td>
<td>(-0.05) (-0.54)</td>
</tr>
<tr>
<td>Head office</td>
<td>-.00 -.01</td>
<td>.02 .05</td>
</tr>
<tr>
<td></td>
<td>(-0.05) (1.15)</td>
<td>(0.19) (1.57)</td>
</tr>
<tr>
<td>Field Sales</td>
<td>.24* .24†</td>
<td>.18† .20</td>
</tr>
<tr>
<td></td>
<td>(2.26) (1.89)</td>
<td>(1.67) (1.58)</td>
</tr>
<tr>
<td>Network Density</td>
<td></td>
<td>.17 .21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.29) (-1.24)</td>
</tr>
<tr>
<td>Bridging Network</td>
<td>-.37** -.26*</td>
<td>.36** .24†</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.66) (-2.09)</td>
</tr>
<tr>
<td>Network Diversity</td>
<td>-.23** -.25*</td>
<td>.30** .26*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.64) (2.35)</td>
</tr>
<tr>
<td>Multiplexity</td>
<td></td>
<td>.25* .10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.46) (0.87)</td>
</tr>
<tr>
<td>Bridging Net x Network Density</td>
<td>.26* .24†</td>
<td>.40* .37*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.06) (1.94)</td>
</tr>
<tr>
<td>Multiplexity x Network Diversity</td>
<td>.09</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.12) (1.32)</td>
</tr>
<tr>
<td>R²</td>
<td>0.36 0.36 0.46 0.46</td>
<td>0.48 0.48 0.49 0.49</td>
</tr>
<tr>
<td>R² Change</td>
<td>0.36 0.36 0.10 0.10</td>
<td>0.03 0.03 0.01 0.01</td>
</tr>
<tr>
<td>R² Adj.</td>
<td>0.31 0.31 0.39 0.39</td>
<td>0.41 0.41 0.42 0.42</td>
</tr>
<tr>
<td>ΔF</td>
<td>7.81** 3.73** 4.25* 1.75</td>
<td>3.90* 2.46† 6.11* 0.65</td>
</tr>
</tbody>
</table>

†p < .10; *p < .05; **p < .01, *n = 101. Regression coefficients are standardized coefficients ($\beta$) and |t-test| within parentheses.

We estimated the impact of the four network variables and the six control variables on the performance measures. Tests for multicollinearity revealed no problems. The highest values for VIF and the Condition index were 4.34 and 26.15 respectively. The indices lie below the
threshold values of 10 for the VIF test and 30 for the Condition index (Hair et al. 1998). An incremental F-test was used to assess the impact of variables as they are added into the models (Aiken and West 1991). Inclusion of the main variables (i.e. network variables) increased the variance explained by up to 6% compared with the model with the main variables, which indicates that the inclusion of the variables is warranted. When a significant moderator effect is found, Aiken and West (1991) recommend assessing the high and low effects of the moderator effect on the relation between the independent variable and the dependent variable by computing the standardized coefficient of the moderator variable.

We tested a series of four regression equations for annual sales (1a, 2a, 3a and 4a) and for sales growth (1b, 2b, 3b and 4b). In the first models (1a and 1b), we included the control variables age, experience, education, team effect, head office and field sales. These variables explained (R^2) 36% of the variance in annual sales and 26% of the sales growth. In the second models (2a and 2b), we added the main effects network density, bridging networks, network diversity and multiplexity. Adding the main effects explained an additional 10% of the variance (F-change = 3.73, p<0.01) of the annual sales and 10% of the sales growth (F-change = 2.46, p<0.10). In the third model (3a and 3b), we introduced the interaction between bridging network and network density. Including the interaction variable explained an additional 3% (F-change = 4.25, p<0.05) of annual sales and 6% (F-change = 6.11, p<0.05) of sales growth. Finally, we included the interaction between multiplexity and network diversity in models 4a and 4b. Adding this interaction variable explained only an additional 1% (F-change = 1.75, p>0.10) of annual sales and 1% (F-change = 0.65, p>0.10) of sales growths. The analysis show that adding the interaction variable between multiplexity and network diversity does not significantly explain any additional variance of the two measures of sales performance. Therefore, the explanatory power of models 3a and 3b supports the examination of the individual coefficient’s impacts on the performance outcomes. The final explained variances of models 3a and 3b are 48% and 41% respectively.

Interpreting the results of models 3a and 3b, we find consistent support for the direct impact of every network variable on performance, except multiplexity on sales growth. Network density influences annual sales (β=.37, p<.05) and sales growth (β=.50, p<.05). This is in accordance with hypothesis 1. Salespeople with high bridging network in the intrafirm sales network achieve higher annual sales (β=.36, p<.05) and achieve marginally higher sales growth (β=.34, p<.10), as proposed in hypothesis 2. The results also show a significant impact of network diversity on annual sales (β=.30, p<.01) and sales growth (β=.37, p<.01). This set of results is in line with Hypothesis 4. We found a significant impact of multiplexity on annual sales (β=.26, p<.05) and there is no significant impact of multiplexity on sales growth. It appears that maintaining friends in your task-advice network could be costly and might not pay off in the long run. Hypothesis 5 is partially supported.

Network density significantly moderates the relationship between bridging networks and annual sales (β=.26, p<.05) and sales growth (β=.40, p<.05). Analyzing the moderated impact of bridging networks on annual sales, we find that the effect of bridging networks is lower in the context of low density (β_{low network density}=.10, p<.05), whereas the effects of bridging network is enhance by increased density (β_{high network density}=.62, p<.01), and the impact of bridges on sales growth is low in low density (β_{low network density}=.06, p<.05), whereas the impact of high bridges on sales growth is greater under a high density context (β_{high network density}=.74, p<.01). Salespeople appear to leverage their broker position by simultaneously creating more dense networks in order to increase sales performance. This is in line with the argument of hypothesis 3 that suggests a
combination of local density with global bridging network. Multiplexity does not moderate the relationship between network diversity and sales performance. Although the coefficient is not significant, the sign (i.e. direction) is in line with hypothesis H6.

Several control variables have significant effects on sales performance. Age appears to be associated with sales performance. The older the salesperson is the higher annual sales ($\beta=.46$, $p<.01$) and sales growth ($\beta=.32$, $p<.01$). There is a marginal negative effect of experience on annual sales ($\beta=-.18$, $p<.10$) and sales growth ($\beta=-.20$, $p<.10$). It appears that experience with the activities of the firm hinders sales in the short and long run. One might suggest that salespeople tend to learn ways to deal with the formal structure and get along with low performance. In terms of education, the higher the level of education, the higher the annual sales ($\beta=.22$, $p<.05$). Education does not affect the growth in sales. Team effect does not impact sales performance. This shows that the division performance and the economic activity of the region do not differentially affect salesperson performance. Being a salesperson located at headquarters does not offer any significant benefit for performance. Finally, field sales marginally influences annual sales ($\beta=-.18$, $p<.10$) and does not significantly influence sales growth.

Discussion

The study results provide strong support for our overarching assertion that the performance of salespeople, as relationship managers, should be viewed from as a social network perspective. While marketers have traditionally sought to isolate the individual characteristics of the salesperson that predict success, this study provides empirical evidence that supports the recent observations by scholars that the role of the salesperson has evolved from a seemingly individual phenomenon to one where success is driven by a set of social ties of which the salesperson is a part (Jones et al. 2005; Weitz and Bradford 1999). Consequently, the study advances our knowledge of the ways in which salespeople bring to bear the competencies of their firm in order to serve customers. By drawing on social capital theory, we introduce a new theoretical lens from which the intrafirm actions of the salesperson can be viewed. The results suggest that managing customer relationships is enhanced when salespeople are uniquely embedded in the intrafirm sales network. Specifically, the way in which salespeople structure the ties that they maintain internally is critical to accessing needed information and integrating the expertise found within the firm. In addition, the different types of relationships and the resources at the disposal of network members positively influence salesperson performance. These findings provide compelling implications for both marketing theory and practice.

Managerial Implications

Managerial implications revolve around two key issues: how to structure the salesforce in order to reap the benefits of intrafirm sales networks, and how to train and motivate salespeople to build and participate in intrafirm sales networks. The study results reveal that while salespeople may be viewed as independent actors striving to manage customer relationships on their own, they are really a member of an intrafirm group fashioned to assist the salesperson in leveraging the vast expertise of their firm to deliver customer value. These findings further validate the notion that all salespeople should work within groups or teams in their firm. Consequently, the results suggest that firms need to enable a salesperson’s search for critical resources within the firm. Given the results it seems that salespeople should be encouraged to first reach out into their organization’s disparate functional units to identify critical experts, and
then bring them together in a tightly woven net in order to establish normative behaviors that would drive cooperation.

Sales organizations should promote a network based view of selling by training salespeople to learn network building skills. This could include the promotion of a wide range of behaviors. At the heart of relationship building in social networks is the concept of reciprocity (Adler and Kwon 2002). It has been recently proposed that undertaking actions that engender gratitude is the key antecedent to the reciprocal behavior of a partner (Palmatier 2008b), also that ingratiatory tactics can lead to the development of interpersonal relationships in a sales setting (Strutton and Pelton 1998). These actions are the basis of what has long been referred to as networking in the sales job and must be promoted and developed in salespeople by the sales organization. In addition, the sales organization should create an atmosphere conducive to the development of diverse social networks. Rotating the assignment of salespeople so that they can be exposed to disparate intrafirm units could facilitate exposure to vital cross-functional knowledge. Also, sales organizations can organize social events aimed at bringing together individuals from various domains inside the firm. These actions could result in the establishment of more friendship based bonds between intrafirm employees and the salesperson.

The results also suggest managerial implications for the role of technology in intrafirm relational information processes. The findings suggest that intrafirm sales network can be facilitated via technology that captures the expertise of individuals and puts it at the fingertips of the salesperson. These efforts are already underway in firms like Accenture that have created their own version of the social networking software Facebook in order to provide to all their employees the ability to quickly access individual experts in the firm as needed (Humphries 2008). Specifically, salespeople can utilize these types of technologies to gain marketing, sales, and service support (Jayachandaran et al. 2005). In this way, firms can recognize the importance of data-driven activities to salesperson performance, and produce an information intensive environment facilitated by sales technology use (Hunter and Perreault 2007).

Limitations and Future Research

To put our findings in the proper perspective, we must consider some limitations of the study. First, our study focused on a very specific set of social network variables for explaining sales performance. We chose what we believed to be the central social capital constructs for explaining salesperson performance. The results support our intuition as a large percentage of salesperson performance was accounted for by the study variables. Still, future research needs to expand the network variables investigated for salesperson performance. Other structural configurations such as those related to the centrality of the salesperson in the sales network, the formation of cliques or subgroups, and the prestige of the salesperson or degree to which the salesperson receives the relational objects sent by others should be explored for their impact on performance.

Second, we study only two kinds of relations among the members of the intrafirm sales network, advice and friendship. Many other types of relations exist that could impact salesperson performance, for example, gossip ties that reveal the behind the scenes ‘goings on’, mentorship ties that provide socialization and career support, crises management ties used for failure recovery, and internal buy-in ties crucial for project or solution approval (Krackhardt and Stern 1988; Podolny and Baron 1997). In addition, research efforts can continue to uncover how relations among intrafirm sales network members overlap. For example, a very useful study could focus on affiliation networks, or the shared involvement of sales network members in a set
of social events. This particular type of study could uncover the events that drive the formation of embedded intrafirm ties needed to gain access to sales resources.

Third, our study is based on data gathered within a single firm, limiting the generalizability of our findings. Counterbalancing this concern, however, is the usefulness of the single-firm method for probing a complex organizational phenomenon and building new theory regarding this phenomenon (Bonomo 1985; Eisenhardt 1989). Future studies should explore the impact of these constructs for salesperson performance across a range of industries and selling environments. The study results may be moderated by the types of products or services being sold, organizational culture, or external environmental forces.

References
_____ (1990), Foundations of Social Theory. Harvard University Press. Cambridge, MA.


