

DOES INTRAORGANIZATIONAL NETWORK EMBEDDEDNESS IMPROVE SALESPEOPLE'S EFFECTIVENESS? A TASK CONTINGENCY PERSPECTIVE

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Using a two-phase research methodology, this study investigates the relationship between salespeople's intraorganizational network embeddedness and their sales effectiveness. Following the findings of the exploratory research, we first distinguish salespeople's intraorganizational networks on the basis of their content—work versus social networks—and their tie activation frequency. Next, we focus on three main sales tasks, opportunity-identification, solution-creation, and closing the deal, and uncover that overcoming the challenges of each sales task requires mobilizing particular intraorganizational resources. We show that work and social networks give access to different sets of resources, and we develop a contingency model that explains which networks and network ties are likely to be more instrumental for salespeople's effectiveness at each sales task. In the second phase of the research, we test the contingency model using a sociometric method. The results indicate that for effectiveness in opportunity-identification, social as opposed to work networks are most instrumental. For effectiveness in solution-creation, work rather than social networks are more critical. And for closing the deal, both work networks and social networks are important. Furthermore, salespeople who have frequently activated network ties are consistently more effective than salespeople who may have many ties but who activate them less frequently.

From the simplest products to the most complex services, today's sales environment is marked by ever-increasing demands for knowledge, communication, coordination, and customization (Jones et al. 2005a; Richards, Moncrief, and Marshall 2010). Customers want salespeople to "process, internalize, and manage increasing information loads" (Jones et al. 2005a, p. 106), and companies spend billions of dollars in technologies to support their sales force in their efforts to strengthen their relationships with their customers (Ahearne and Rapp 2010; Hunter and Perreault 2007).

Customers expect more and they want it now (Crittenden, Peterson, and Albaum 2010; John, Weiss, and Dutta 1999; Johnson and Selnes 2004). Indeed, customer expectations are increasing faster than what salespeople can deliver on their own. As a result, salespeople are forging new roles. Rather than operating as "lone wolves" (Jones et al. 2005a), effective salespeople are more and more functioning as strategic "orchestrators" (Jones et al. 2005b; Weitz and Bradford 1999). They span boundaries (Moon and Armstrong 1994), and coordinate the expertise within their organizations to deliver

the right value for their customers (Glazer 1991; Steward et al. 2010).

These new, more expansive roles require salespeople to have access to resources that they cannot develop on their own. As a result, effective salespeople search within their firms to uncover the kinds of resources their organizations can offer to them. They engage in behavior that Plouffe, Sridharan, and Barclay (2009) call "exploratory navigation." The salespeople identify where the relevant resources lie within their organization, and discover ways to gain access. Next they mobilize these resources to best fit with the customers' requirements. Once the proposed customer solution is created, they follow up with their customer, and implement the requested changes to close the sale effectively. When that sale is closed, they continue managing the relationship for future sales opportunities. All these sales tasks require the salespeople to have complete support from their internal organizations (Mehra et al. 2006). In order to manage their customer relationships smoothly on an ongoing basis, and to effectively make a sale, the effective

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salespeople first sell it inside their own organizations (Steward et al. 2010; Weitz, Castleberry, and Tanner 2008).

Interestingly, however, the literature has been mostly silent on the role that the nonsales employees of an organization may play in enhancing (or undermining) the sales process. Some researchers have suggested the importance of intra-organizational social networks in sales effectiveness (Homburg, Workman, and Jensen 2002; Üstüner and Godes 2006). Yet there has been little empirical research to date linking sales effectiveness and intraorganizational network embeddedness. One notable exception is Steward et al.'s (2010) study, which demonstrates the importance of salespeople's social networks in enabling salespeople to function better as coordinators of expertise inside their organizations.

Our goal in this paper is to contribute to this evolving literature by uncovering how salespeople's network embeddedness shapes their sales effectiveness at three main sales tasks: (1) opportunity identification, (2) solution creation, and (3) closing the deal. Given that this is one of the first attempts to explain the relationship between network embeddedness and sales effectiveness, we use a two-phase research methodology. In the exploratory phase we uncover that there is a contingent relationship between salespeople's network embeddedness and their effectiveness. Following the findings of the interviews conducted with salespeople, their colleagues, and sales managers, we develop a contingency model and specify our findings with three sets of hypotheses. In the second phase, we test these hypotheses using a sociometric network methodology (to uncover salespeople's network variables) and surveys collected from sales managers (to uncover salespeople's effectiveness at each task). The findings support the contingency model.

We start with a literature review on sales effectiveness. Following the findings of the exploratory research and the literature on social networks, we develop the task contingency model, mapping out which social networks and network ties are likely to be most instrumental for sales effectiveness at each sales task. Next, we describe our two-phase methodology. We then present the results of the sociometric study and the survey study conducted during the second phase of the research, where we test the contingency model. We conclude with discussions, limitations, and directions for future research.

LITERATURE REVIEW AND THE DEVELOPMENT OF HYPOTHESES

Sales Effectiveness

Until recently, the extant sales literature defined the sales process as a dyadic process that takes place between the salesperson and the customer (or the sales team and the procurement team). According to this traditional philosophical point of view, effectiveness in sales depended on the salesperson's personal resources, selling skills, cognitive abilities, personality,

educational background, experience, motivation, role perceptions, and aptitude, holding environmental and firm-level factors constant (e.g., see Churchill et al. 1985; Vinchur et al. 1998; Walker, Churchill, and Ford 1977; Weitz 1981). In this literature, the role of intraorganizational resources in sales effectiveness was mentioned only in passing.

During recent years, however, an important shift has taken place in the sales literature, as was documented in the twenty-fifth anniversary special issue of the *Journal of Personal Selling & Sales Management* in 2005. In that issue, sales scholars discussed the major changes that were taking place in the sales environment. They discussed the new roles the salespeople need to assume to overcome the challenges of this new environment (see also Moon and Armstrong 1994; Richards, Moncrief, and Marshall 2010; Steward et al. 2010; Weitz and Bradford 1999). In addition, they called for studies that revisit some of the basic sales concepts (Jones et al. 2005a; Jones et al. 2005b). These scholars argue that in today's sales environment, knowledge is becoming an explicit part of the market offering—customers derive value from knowledge and are willing to pay for it (Jones et al. 2005a; Powell and Snellman 2004).

As knowledge becomes more important strategically, knowledge bases continue to expand (Castells 2001; Johnson, Sohi, and Grewal 2004; Powell and Snellman 2004). The sources of expertise become more specialized and dispersed, making individuals and departments within firms interdependent for knowledge sharing. These changes blur the boundaries between intra- and interorganizational structures and processes (Powell, Koput, and Smith-Doerr 1996; Workman, Homburg, and Jensen 2003). As a result, sales no longer functions as a department unto itself; instead, it must collaborate with other departments (Anderson 1996). For example, salespeople selling computer servers depend on the support of their immediate group of colleagues, as well as the support and expertise of hardware and software engineers throughout their company. Salespeople are facile representatives of a broad set of sales support functions. Although these functional supporters are not explicitly on the sales team, the implicit sales support combines sales and nonsales employees' efforts in creating value for the customer (Moon and Armstrong 1994).

As the sales function continues to change, salespeople's individual resources are falling short of meeting these new challenges (Üstüner and Godes 2006). Salespeople can no longer accumulate all the requisite knowledge resources on their own, so they increasingly depend on their social networks to access, share, and coordinate the cumulated knowledge embedded in the networks (Podolny and Page 1998; Powell and Snellman 2004; Troy, Hirunyawipada, and Paswan 2008). In Plouffe's and Barclay's words, "salespeople require the ability to navigate within their own organization to get what they need to be successful" (2007, p. 528).

The theoretical arguments for the importance of network embeddedness for sales effectiveness are compelling, but the sales literature is still in its infancy with respect to empirical support for these conceptualizations. A new literature is beginning to emerge. For example, Plouffe, Sridharan, and Barclay's (2009) investigation into salespeople gathering internal resources captures the importance of leveraging one's ties. Likewise, Steward et al.'s (2010) study focuses on the role of salespeople's internal working relationships and uncovers how these relationships impact salespeople's coordination of expertise inside the firm directly and their overall sales performance indirectly. They define salespeople's internal working relationships in terms of their reputation, diversity, and strength. They show that reputation, diversity, and tie strength of internal relationships are positively related to salespeople's coordination of expertise inside the firm, which in turn is positively related to their overall performance. Even though Steward et al.'s study is a fine beginning in building our understanding of the role of salespeople's intraorganizational network embeddedness in sales effectiveness, it focuses on only one particular sales task (coordination of expertise) and one particular network (work networks).

In this research, we contribute to this emerging literature by developing a contingency approach to the relationship between network embeddedness and sales effectiveness. We focus on two sets of contingencies. First, we distinguish salespeople's intraorganizational networks on the basis of their content (work versus social networks) and frequency of interaction. Following the literature in organizational behavior and the findings of the exploratory research, we posit that salespeople's work and social networks give access to different resources that could be more or less useful to the salespeople depending on the sales task that they want to achieve. Second, we focus on salespeople's effectiveness in three main sales tasks that are included in most sales process models in the literature: opportunity-identification, solution-creation, and closing the deal (Creyer and Ross 1994; Moncrief and Marshall 2005; Rentz et al. 2002). Then, we develop a contingency model that specifies the types of networks and the kinds of ties within them that would be most instrumental in salespeople's effectiveness at each sales task.

Types of Networks and Network Ties

A network is defined as a set of actors and the ties that connect them (Iacobucci and Hopkins 1992; Knoke and Yang 2007; Ronchetto, Hutt, and Reingen 1989). Different sets of people will certainly yield different networks, but even the same collection of people, such as salespeople in an organization, can yield information about multiple "networks," if the links between these people reflect different means of interacting. For example, the sales force can be asked to report on their friend-

ship ties, their communication ties, their e-mail exchanges, and so on, and these structures will not be redundant.

Work Networks Versus Social Networks

Marketing scholars studying relationships in sales and marketing have found it useful to distinguish between social ties and task-related interactions (e.g., Bradford, Stringfellow, and Weitz 2004; Frenzen and Davis 1990; Goldenberg et al. 2008; Grayson 2007; Price and Arnould 1999). For example, while trust in one's coworkers is frequently touted as extremely important to performance and satisfaction (Brashear et al. 2003; Jones et al. 2005b; Lin 2007; Seever, Skinner, and Kelley 2007), marketers also speak of holding team members accountable for task-related performance (Jones et al. 2005b). Alternative labels have been used to characterize analogous constructs, such as task- and emotion-oriented skills (Bradford et al. 2010; Plouffe and Barclay 2007).

We will leverage these distinctions. For simplicity, we refer to "work" network ties and "social" network ties, where work network ties involve the sharing of fine-grained technical information about work-related matters such as product specifications, financing models, logistics, and other process management information. Social network ties are the ties connecting people who spend time together because they enjoy each other's company. In terms of network analysis, work ties and social ties typically result in fairly different network structures—actors who communicate technical information frequently are not necessarily friends, and actors who are centrally embedded in one network may be more peripheral in another (Gundlach and Foer 2008; Knoke and Yang 2007).

Interconnections in work networks are clearly important to attain work goals. They facilitate the sharing of technical information. For example, a salesperson taps a work network tie when seeking to answer a question that a customer raises about a product. Work network ties are instrumental to the basic process of creating value for the customers, including the adaptation of the firm's offering to a particular customer's needs, to make a product-service package attractive to a customer in the selling process.

In contrast, social network ties may appear to be "softer," but they can be equally important, albeit in different ways. Social ties are critical in the formation of bonds among colleagues, and are the foundations in building trusting personal relationships. Trust, in turn, gives access to fruitful sales-related information. For example, social ties often yield leads in identifying potential customers, such as when a friend at one company recommends contacting his or her counterpart at another company who may have similar purchasing requirements. Social norms encourage people embedded in social networks to go the extra mile for their friends when they know their friends need a favor.

Thus, we anticipate that it will be useful to distinguish intraorganizational networks in terms of work and social networks. When salespeople access their work networks versus social networks, we posit that they are seeking different resources, abilities, and knowledge bases, and we will empirically test these distinctions.

Frequent Versus Infrequent Contact

In addition to varying in terms of content, network ties also vary in the frequency of interactions among the actors in the network. A work network connection that involves frequent interactions is likely to influence sales performance differently from a work network connection that involves less frequent interactions. To illustrate, imagine a small organization. In such a firm, it is likely that most parties know each other and the work network may be fairly dense (i.e., the proportion of links among actors is high). Yet the mere existence of a tie does not necessarily imply that a lot of information is being shared between the actors. Ties that are useful to a salesperson are those that are frequently accessed to leverage critical information.

To maximize sales effectiveness, knowledge sharing requires frequent interactions. The timeliness, intensity, and volume of information that must be shared cannot be done at casual, infrequent intervals. Jones et al. (2005b) hypothesized that strong relationships should facilitate positive performance outcomes.

Sales Tasks

The sales literature defines the sales process as consisting of "various stages" (Rentz et al. 2002, p. 15) during which the salesperson's skills are tested by diverse customer demands. Numerous conceptual partitions of stages have been suggested in the literature, and no one's set of stages are intended as exhaustive or immutable. For example, some scholars have developed a five-stage process (Creyer and Ross 1994; Weitz 1978), whereas others have defined sales as a six-stage process (Rentz et al. 2002) or a seven-stage process (Moncrief and Marshall 2005). Presumably, these scholars are not disagreeing with each other so much as emphasizing slightly different elements they wish to highlight.

In addition, some scholars define the sales process in terms of distinct tasks that the salespeople are required to perform, such as prospecting, preapproach, approach, presentation, overcoming objections, close, and follow-up (Moncrief and Marshall 2005). Others define it in terms of the salesperson's adaptiveness in impression formation, strategy formulation and transmission, and the evaluation of outcomes and adjustment of the preceding steps (Creyer and Ross 1994; Weitz 1978).

Our goal in this paper is to develop *not* a comprehensive sales process model, but a network contingency model for sales effectiveness. So, rather than focusing on all the potential sales tasks, phases, or stages, we focus on the three sales tasks that almost all salespeople are required to deliver regardless of the simplicity or complexity of the products or services that they are offering—opportunity-identification, solution-creation, and closing the deal.

Opportunity-Identification

The opportunity-identification task involves identifying new potential customers (Weitz, Castleberry, and Tanner 2008). It is also referred to as "prospecting." For effectiveness in opportunity-identification, information about the "whereabouts" of potential customers is critical. A salesperson who calls on a customer who the salesperson knows is looking for the product or the service that the salesperson's firm is offering will be in a much better position than the salesperson who blindly cold-calls on customers regardless of whether they need the offering. Thus, salespeople's effectiveness in opportunity-identification depends on their receiving information about more new customers as quickly as possible.

We argue that salespeople's social networks rather than their work networks will be instrumental in salespeople's effectiveness in opportunity-identification. As Powell points out, "the most useful information is rarely that which flows down the formal chain of command in an organization. . . . Rather, it is that which is obtained from someone you have dealt with in the past and found to be reliable" (1990, p. 304; see also Podolny and Page 1998, p. 62). The management literature demonstrates the importance of informal network ties in the speed in which organizational actors learn about new projects and new resources that are not readily available to others within the organization (Burt 2001; Gabbay and Zuckerman 1998; Mehra et al. 2006). This kind of valuable information travels in informal social networks rather than work networks because its transfer requires a special connection between the information giver and the receiver. And such a special connection is likely to exist among colleagues who not only see one another at work but also spend time together outside of work.

Consider two illustrative quotations from effective salespeople about how they learn of possible new customer opportunities. (These quotations are extracted from interviews in the first phase of the research project. We describe the sample and methodology below.)

If you have a good relationship with them [your inside salespeople] one of them might just call and say, "Hey, listen. I just ran across this [a new customer]. Can you take a look?" (Salesperson 1)

If I establish a quality relationship with my engineers, then they will give me the leads like, "Hey, there is a new company out there, this is what they are going to build. You might want to go in there." (Salesperson 2)

Per the aforementioned literature and the above quotations, we predict that social networks should be more instrumental in opportunity-identification than work networks. Further, following Frenzen and Nakamoto (1993), who show that individuals share valuable information with their strong ties rather than weak ties, we argue that it is not the mere existence of ties but the existence of ties that are activated frequently that is instrumental in salespeople's effectiveness in opportunity-identification. When valuable information is shared, both the information giver and the receiver know that transmission of such information is a favor that the information giver does for the receiver. They also both know that at the time of information delivery, the relational tie has been tapped asymmetrically. Further, this asymmetry is acceptable among contacts who frequently socialize because both parties know that in the long term, the information receiver will return the favor in one form or another. Such an expectation requires trust; and trust is clearly facilitated by a social tie, a friendly understanding, a fit of values between the two parties (Richards and Jones 2009) who frequently socialize. Thus, frequently activated social ties should be more helpful in obtaining new customer information than social ties that are largely inert (see Brown and Reingen 1987). Thus, we predict:

Hypothesis 1a: When identifying opportunities, salespeople who have a high number of frequently activated social network ties are more effective than salespeople who have a high number of frequently activated work network ties.

Hypothesis 1b: When identifying opportunities, salespeople who have a high number of frequently activated social network ties are more effective than salespeople who simply have a high number of social network ties.

Solution-Creation

The solution-creation task requires the salesperson to reach out to the prospect and uncover the prospect's particular needs. The goal is to match the prospect's requests with the selling organization's offerings. Should there be a match, then the salesperson has created a solution for the customer. Such a match has been demonstrated to be important to both the customer, as in service recovery (e.g., Gonzalez et al. 2010), and the salesperson, per his or her job satisfaction and intention to stay in their current positions (Jaramillo et al. 2009).

In today's knowledge-intensive sales contexts the information and expertise required to successfully create a solution for the customer must be gathered from diffuse sources. Effective

salespeople described their approach to the solution-creation task as follows:

When the customer is trying to select the component, it is my responsibility to make sure that he understands all two, three, or four solutions. That is my job. For that I get help from four, sometimes five, different specialists. I bring them into the account so that they [the customer] know what is available. (Salesperson 3)

I work with all of them depending on what the application is. Customers have a design cycle. There are certain times when I need help from generalist engineers and certain times when I need help from specialists. So it is key to have relationships with all of them. (Salesperson 4)

These salespeople pointed out that they must work closely with the customer as well as their support network in their own organization to know what solutions are available, to communicate these solutions, and if required, to make customized changes to ensure that the solutions matched with the customer's requirements.

Creating such solutions demands a level of knowledge and expertise that is impossible for the individual salesperson to acquire on his or her own. Indeed, in Steward et al.'s words, "the development and delivery of these often customized solutions are no longer the responsibility of an individual salesperson, but instead are crafted by an ad hoc, cross-functional team that is assembled and managed by the salesperson to meet specific customer requirements" (2010, p. 550). Thus, to be effective in solution-creation the salespeople need to function as coordinators of expertise in their own firms (Steward et al. 2010). They need to access to technical information resources embedded in their work networks (Onyemah, Swain, and Hanna 2010). Work networks are an important asset for this task because they spur innovative solutions "by encouraging novel syntheses of information that are qualitatively distinct from the information that previously resided within the distinct nodes" (Podolny and Page 1998, p. 61).

Furthermore, frequently activated work network ties are likely to be more instrumental for effective solution-creation because as demonstrated in both the marketing and the organizational behavior literature, frequently activated ties give access to more depth and breadth of knowledge (Hansen 1999). For example, Powell, Koput, and Smith-Doerr's (1996) study of interorganizational alliances in the biotechnology industry show that firms with both diverse and strong ties innovated more and so grew faster than their competitors. Likewise, Steward et al.'s (2010) study shows that salespeople with more close, important, and frequent intraorganizational connections were better at coordinating expertise in their own firms, and in turn were more effective. Frequently connecting with work network ties is also important in today's fast-paced marketplace

because information can quickly become obsolete. Thus, only those salespeople who keep their contacts active are likely to have up-to-date knowledge, which is necessary to find just the right solution for their customers. Therefore, we predict that the optimal network configuration for solution-creation is to have many frequently activated work ties:

Hypothesis 2a: For solution-creation, salespeople who have a high number of frequently activated work ties are more effective than the salespeople who have a high number of frequently activated social ties.

Hypothesis 2b: For solution-creation, salespeople who have a high number of frequently activated work ties are more effective than salespeople who simply have a high number of work ties.

Closing the Deal

Success in closing the deal hinges on two critical elements. The first is the successful implementation of what is promised during the previous phases of the sales process, and the second is the ability to manage the customers' new needs regarding logistics, financing, and other special requests. And all these require the salespeople to coordinate the efforts, skills, and expertise of diverse intraorganizational actors, getting them to work together cohesively and with generosity of effort toward a common goal—closing the deal.

According to the organizational behavior literature, when an organizational task requires the effective coordination of the participants' efforts—as does closing the deal—actors need all the resources embedded in their networks. So we argue that both work networks and social networks will be instrumental for effectiveness at closing the deal. For example, in his garment industry study, Uzzi (1996) found that networks provide three benefits. First, networks build trust, and trust serves as a governance mechanism between actors (Coleman 1988; Granovetter 1973). When trust is present, network actors will voluntarily give extra effort to the relationship, and they will believe that the other will not take advantage of them (i.e., opportunism is minimized). So trust decreases the governance costs and risks associated with doing business. For the development of trusting relationships, embeddedness in social networks would be most useful. Second, networks enable fine-grained technical information transfer among actors. So interaction between actors is easier and more efficient, which in turn improves the effectiveness of joint activities. For the transfer of such information, embeddedness in work networks would be most useful. The third benefit is that networks serve as problem-solving mechanisms that enable actors to coordinate functions and work out problems "on the fly." Informal arrangements such as routines of negotiation and

mutual adjustment arise in networks that allow actors to flexibly resolve problems. To receive all these network benefits at the same time, we argue that both work networks and social networks would be instrumental in salespeople's success in closing the deal.

Furthermore, given the extent of coordination efforts required by the salespeople to effectively close a deal, we expect salespeople with frequently activated intraorganizational contacts to be much more effective than those with mere contacts. Indeed, during the interviews the effective salespeople pointed out the importance of cooperation of diverse intraorganizational contacts for an effective closing. These salespeople believed that reception of their contacts' cooperation depended on the extent to which the salespeople kept them "in the loop" (an emic term used by the salespeople) regarding how the sale is progressing. When the salesperson's intraorganizational contacts knew about the requirements of the customer and the stage the sales process was at, they were much more proactive in helping the salesperson. Their involvement and speedy response to customers' needs made the customers feel reassured about their purchase decisions. They felt much more comfortable with the sale and the prospect of having a long-term relationship with the salespeople and the selling firm because the customers knew that the salespeople and the selling firm would be there to take care of their needs. Accordingly, effective salespeople make a point to frequently connect with their intraorganizational contacts, inform them how the sale is progressing, and suggest that they be part of the sales process as much as possible:

You know, I give them [inside salespeople] a little bit of heads-up. "You should call this person, or take him out for lunch, or this is happening over there." It helps if they know. Then they ask about it. It makes their job a little bit easier. And you gotta keep that communication line open. If you do, then it's a good working relationship. Because without them giving proper pricing, booking the orders, and making outgoing calls, you can do all the design activity you want and you will lose. We are only as good as our inside people. If they are lousy, and lousy to our customers, we will lose big time. They have got to be good. (Salesperson 5)

I communicate with them [inside salespeople] quite often because I want all of us to be on the same page of you know what is going on, the more they know about what is going on at the customer, the more they will talk about it with the purchasing group, and the more likely you're gonna be able to capture that business. I may say to an inside person, "Hey, I was in B and we talked about the M parts, you can expect a call from them, this is the part they might be interested." When B calls them you know they are aware of it. (Salesperson 6)

Thus, the salesperson's ideal network configuration for effectiveness in the closing-the-deal task would have many frequently activated work and social ties (e.g., Mehra et al. 2006):

Hypothesis 3a: For the closing-the-deal task, salespeople who have a high number of frequently activated social ties are more effective than salespeople who merely have a high number of social ties.

Hypothesis 3b: For the closing-the-deal task, salespeople who have a high number of frequently activated work ties are more effective than salespeople who merely have a high number of work ties.

Hypothesis 3c: Salespeople will be more successful at closing the deal if they have a high number of frequently activated social ties and a high number of frequently activated work ties.

METHOD

Here we begin by describing the context in which our theorizing will be tested. We then describe the data collection procedures, including the measures gathered to represent the network phenomena, and the dependent variables representing the performance of salespeople throughout the sales process. In order to enhance the internal and external validity of this study, we used a variety of control variables. We also describe those controls.

Research Setting and Data Collection

Data were collected in 12 locations of an electronics components distributor that we will call "Alpha Corporation." Alpha's electronic components are highly technical products, including semiconductors and electromechanical components. The supply side of the electronic components industry is extremely fragmented, that is, over 600 manufacturers offer thousands of components. Most manufacturers specialize in only a few components, which creates further fragmentation of expertise. Furthermore, knowledge is outdated very quickly in these markets, for example, there are monthly new product introductions, resulting in very fast knowledge creation turnover. Together, these factors suggest that the sales in the electronic components industry may be a good context that bears some of the characteristics of the new sales environments outlined by the sales scholars (Jones et al. 2005a).

Given the theoretical gap in the literature on the relationship between salespeople's network embeddedness and sales effectiveness, we used a two-phase research design (Bonoma 1985; Eisenhardt 1989; Narayandas and Rangan 2004; Van Maanen 1979). At the exploratory stage, the first author conducted over 90 hours of interviews with all 44 employees, including both sales and nonsales senior management, in a northeastern location of Alpha Corporation. The first author also regularly observed the group interactions of salespeople

with their coworkers from various departments and conducted many shorter informal interviews, taking extensive notes after each interview. At the second phase, a contingency model was developed to explain the phenomenon, and hypotheses were formalized to be tested by the sociometric method.

Sociometric Method

There are two primary ways that social network data may be collected—the full sociometric method and the egocentric method. The former method is the classic approach in which relational data are obtained from all actors within the network. In this approach, each member of the network, such as the current employees of an organization, is surveyed to understand his or her relationships to every other member. Clearly, this approach requires extensive effort in data collection because the number of actors and resulting ties is often very large.

As a result, the egocentric method has become quite popular. Instead of gathering the full network data set, researchers survey a standard sample and ask people about their social ties. The technique gets its name from the fact that a respondent in the survey is called an "ego" and the people they report about are called "alters." The alters are not pursued or surveyed for their relational data. Thus, egocentric network maps tend to be much more limited compared to sociocentric network maps—not all actors are captured, and subsequently analyses are greatly constrained (e.g., one cannot detect cliques without the fuller social network data).

We are sympathetic with the fact that most studies in the literature use egocentric as opposed to the fuller sociometric design because of the massive data collection requirements of the full social network. Nevertheless, social network purists argue that only when all the actors within the social structure are included can the full richness of interrelationships be understood (see Knoke and Yang 2007). Thus, even though the full sociometric approach is far more effortful, we used that approach to obtain the highest-quality data for the richest theoretical and empirical insights, the least amount of bias, and to proceed with theory testing in a context as free of alternative explanations as possible.

Multiple Site Testing

Most network studies, indeed most field studies, limit their samples to a single case study, calling into question their external validity (Jones et al. 2005b). Our study focuses on a single firm, and therefore a single industry, but we attempted to broaden our sampling by measuring multiple networks at multiple offices of the firm. Given this sampling frame, we needed to be careful in generalizing our results to different companies or industries. However, we have at least made

data collection efforts so as to study, model, and speak about multiple networks.

Thus, to try to contribute to the existing literature, we surveyed all the actors in the networks across multiple offices of an organization for a full sociometric design within each work site (actors were unfamiliar with and did not interact with employees at another work site). Specifically, networks in 12 Alpha regional offices were studied. These methodological efforts make this investigation one of the more extensive network studies in the literature.

Participation

Survey respondents were incentivized via support from senior management as well as participation in a random draw for five \$100 checks and fifteen \$50 checks. Out of 18 regional offices of Alpha Corporation that initially showed interest, 16 took part in the study. Of these 16 offices, 4 yielded response rates lower than 80 percent. While survey response rates of 80 percent are usually considered quite strong, given the novelty of our study, we sought to be conservative in capturing the full network in these offices, so we retained the 12 offices with stronger response rates. (We note that in checking descriptive comparisons, the excluded offices did not differ statistically from those included in our sample; hence, we believe the relationships we found to be generalizable.) Thus, the final sample consisted of 12 regional offices, and each office had an average of 24.6 employees.

Measures

Network Variables

Network studies typically use single-item scales in collecting relationship data (Knoke and Yang 2007). While multi-item scales are usually advised in traditional surveys, single items are used in network surveys because each respondent needs to answer the same relationship question for each member of the organization (Grayson 2007). To overcome possible reliability issues inherent in single-item scales for networks, network methodologists suggest wording each network question in detail with examples and using terminology that is most accessible to the respondents. To uncover the generally accepted terminology and develop the measures, we used the interview data that we gathered at the first phase of the research methodology. Appendix A contains the wording and scales of the network questions for the work network and social network data.

To be complete, social network data require that a relationship be measured from both parties' perspectives. Thus, for each dyad within the network, there are two data points for each tie: one from respondent 1's perspective and the other

from respondent 2's perspective. When respondents differed in their rating of the relationship, we followed a fairly standard procedure and computed the mean value of both parties (cf. Chatterjee et al. 1992).

Number of Network Ties. We obtained two sets of counts. One set captured all the employees' perceptions of their work ties. The second set of counts captured each employee's perception of the social ties.

Frequency of Network Activation. Much of our hypothesizing revolved around not the sheer number of ties, but the frequency of their activation. Hence, to test hypotheses involving "frequently activated ties," we use the items in Appendix A that pertain to the frequency of work and social tie activation. A tie was counted as a frequently activated if it exceeded the median of the salespeople's ties, and infrequently activated if it fell below the median. (Medians were computed across all salespeople. Medians did not differ substantially across offices, so within-office calibration would have been comparable.)

Dependent Variables

The scale developed by Podsakoff and MacKenzie (1994) was used to measure the salespeople's performance. This construct measures how the sales managers evaluate the salesperson's overall performance.

We designed items specifically to measure the salespeople's performance at the three sales tasks that we studied. Examining performance at a more microlevel, within each stage, is consistent with the philosophy of Plank and Reid (1994), who argued for behavioral indicators as mediators between salespeople's attitudes and motivations and their subsequent financial achievements and satisfaction. For example, an item capturing effectiveness in the opportunity-identification task asked the sales manager to assess the extent to which "This salesperson learns about high potential *new customers* in the *very early stages* of their design cycles." To assess performance in the solution-creation task, we asked items such as "This salesperson delivers the *total number of registrations* I expect from him or her." To assess effectiveness at the closing-the-deal task, we asked items such as "This salesperson closes the orders on *most of the components* he or she helped design." The items are presented in Appendix B.

To enhance the reliability and validity of the scales, we drew on two information sources in their development. First, the previously mentioned in-depth interviews provided an overall understanding of the managers' expectations from the salespeople for each sales phase. Second, we were given permission to read the performance evaluation forms used by the managers. The forms were used for internal evaluation purposes and were confidential, so we did not use those items verbatim, but they

helped us uncover the aspects that the management takes into account in evaluating their salespeople.

We then pretested the performance scales on ten experts. Five of these experts were established marketing academics whose research concentrates on business marketing. Upon receiving feedback from these academics, we deleted items that they felt did not map onto our constructs and we changed wording on others that were not clear. We then implemented the revised survey with managers from industry—three were general managers in different Alpha offices and two were the sales managers at the first Alpha office. We incorporated their feedback into the final instrument.

To capture the performance of a salesperson in *opportunity-identification* of potential new sales, we measured three underlying aspects: (1) how fast the salesperson learns about a new opportunity compared to other salespeople under their sales manager's supervision, (2) when in the customer's design cycle (earlier versus later) the salesperson learns about the new opportunity, and (3) compared to an average salesperson, how many new opportunities the salesperson identifies. The first of these qualities emphasized timeliness, to capture both the competitive speed characterized in many industries, including the context under study and the likely enhanced benefit to the customer of earlier rather than later involvement (e.g., Steward et al. 2010). The third item captured a classic view of sales being partly a numbers game (i.e., more opportunities are required to enable good numbers of conversions).

The second sales phase, *solution-creation*, involves three critical aspects in electronic components sales. First, the salesperson must find the right electronic components for the specific requirements of the electronic boards of each customer. Second, the salesperson must help the customer's engineering team to fit these new components onto their new board. Third, the salesperson must access the engineering team if any compatibility issues arise as a result of the inclusion of the new components to the board. When all of these criteria are met, the salesperson "registers" the component, indicating that the customer has agreed to include the component on its new board. Therefore, the sales managers evaluate the salesperson's performance in solution-creation on the basis of the salesperson's intensity of registration activities, which involves registering (1) more components on more customers, (2) more components per board, and (3) designing more of the key manufacturers' components.

The final sales phase is *closing the deal*. This construct reflects the salesperson's performance at generating sales revenues from the solution-creation activities. Sales managers evaluate salesperson's effectiveness at this stage on the basis of (1) the proportion of registration efforts that is turned into sales dollars per board, and (2) the consistency of the salesperson doing so.

Data on all performance evaluation measures were collected from each salesperson's immediate manager. The scales for

overall performance and performance in each particular sales phase are presented in Appendix B.

Control Variables

The sales literature has demonstrated the importance of managerial styles, organizational and environmental contexts, and individual-level resources on the salesperson's performance (Churchill et al. 1985; Ingram and Bellenger 1983; Venkatesh, Challagalla, and Kohli 2001; Vinchur et al. 1998). Although these factors are not central to our investigation, we recognize their importance and the need to include them in our analysis. Thus, to control for the effects of managerial, organizational, and environmental factors we used fixed location effects, and to control for the effects of individual-level resources we used the three human capital variables that are most frequently cited in the literature: experience, education level, and specialization (Hitt et al. 2001). Specifically, data on salespeople's experience were assessed by the number of years and months that the salesperson had worked in the electronics industry. The education scale asked for the institution from which the salesperson received his or her final degree, with the four classes of institutions being high-school (coded as 12 years), community college (14 years), undergraduate (16 years), and graduate (18 years). Data on specialization in education were determined by whether or not the salesperson had an engineering background.

RESULTS

We tested the psychometric properties of the measures. The reliability estimates for the performance measures (in Appendix B) ranged from 0.73 to 0.94. A confirmatory factor analysis supported the distinctiveness of the three sets of performance measures for the three sales phases, and the model fit well ($\chi^2_{24} = 36.01$, $p = 0.055$, CFI [comparative fit index] = 0.96, GFI [goodness-of-fit index] = 0.91) (Anderson and Gerbing 1988; Hu and Bentler 1999). The factor loadings of items for all the measures were significant, ranging from 0.75 to 0.95. The correlations among the variables are shown in Table 1.

Hypotheses Tests

We tested each hypothesis through comparisons in a series of nested regressions.

Hypotheses About Salespeople's Effectiveness in Opportunity-Identification

H1a and H1b make predictions about salespeople's effectiveness at opportunity-identification. H1a predicts a strong positive relationship between salespeople's frequently activated

Table I
Correlations

	1	2	3	4	5	6	7	8	9	10	11
1. Education	1										
2. Technical Education	0.247*	1									
3. Industry Experience	-0.213	-0.041	1								
4. Opportunity-Identification	-0.059	0.018	0.235*	1							
5. Solution-Creation	0.048	0.146	0.017	0.351*	1						
6. Closing the Deal	-0.075	-0.133	0.106	0.148	0.489*	1					
7. Overall Performance	0.008	0.062	0.139	0.457*	0.645*	0.611*	1				
8. Number of Social Ties	-0.059	-0.098	-0.094	0.241*	0.309*	0.150	0.245*	1			
9. Number of Work Ties	-0.006	0.028	-0.088	0.182	0.172	0.033	0.204	0.809*	1		
10. Number of Frequently Activated Social Ties	-0.034	0.104	0.026	0.118	0.133	-0.280*	0.058	0.396*	0.516*	1	
11. Number of Frequently Activated Work Ties	0.122	0.302*	-0.130	0.219	0.400*	-0.119	0.272*	0.404*	0.457*	0.566*	1

* $p < 0.05$.

Table 2
Network Drivers of Effectiveness in Opportunity-Identification

	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Number of Social Ties					-0.564	-1.929
Number of Frequently Activated Social Ties			0.324	2.269*	0.904	2.775**
Number of Frequently Activated Work Ties			0.001	0.004		
Controls						
Education	0.026	0.210	0.032	0.268	0.038	0.333
Technical education	0.062	0.538	0.089	0.743	0.082	0.745
Industry experience	0.325	2.569*	0.365	2.956**	0.368	3.072**
Location dummy variables	0 of 11*		0 of 11*		1 of 11*	
R	0.57		0.62		0.65	
N	76		76		76	
F-Value	2.146*		2.408*		2.806**	

* $p < 0.05$; ** $p < 0.01$.

social ties to performance compared to frequently activated work ties. H1b predicts a strong positive relationship between salespeople's frequently activated social ties and performance compared to a high number of less frequently activated social ties. The results of these hypotheses tests are presented in Table 2.

The first regression creates a baseline model that assesses only the relationships between the control variables (i.e., the individual trait variables and location effects) and performance in opportunity identification. In each model, there is an effect for the salesperson's industry experience, and a negligible effect of the office locations. The other covariates were not significant.

Model 2 Tests Hypothesis 1a. Compared to the baseline model, Model 2 adds measures capturing the frequently activated ties of both types—work and social. Model 2 explains more variance than Model 1 ($F_{2,59} = 2.931$, $p = 0.061$). Thus, after controlling for individual traits and environmental, organizational, and managerial factors, the inclusion of social network and work network variables help in clarifying our prediction of salespeople's success at opportunity identification. Further, the regression coefficients also support H1a in that the effect for social ties ($\beta = 0.324$) is much stronger than that for work ties ($\beta = 0.001$). We predicted that social ties would be relatively important in finding potential sales opportunities, and work ties less so in this sales phase, and our data support these hypotheses.

Model 3 Tests Hypothesis 1b. Model 3 contains the covariate base and focuses on both variations of the social tie mea-

sures—the simple count of social ties of each salesperson as well as the number of social ties that are frequently activated. Wherein Model 2 established that frequently activated social ties were more important to effectiveness in opportunity-identification than frequently activated work ties, in Model 3, we dig deeper into the nature of the effects of the social ties. Can the mere existence of social ties suffice, or must those social ties be frequently activated? It is clear that these results support H1b—the social ties must be frequently activated to be useful in enhancing the opportunity-identification stage of the sales process. Model 3 explains significantly more variance than Model 1 ($F_{2,59} = 5.191$, $p = 0.008$). Not only are frequently activated social ties more strongly positively related to performance ($\beta = 0.904$), the effect for the simple number of social ties is negative ($\beta = -0.564$), approaching significance. (If that negative effect had been significant, we might infer that spreading out one's socialization efforts is detrimental to identifying sales opportunities and that instead, the salesperson should focus his or her social engagements to fewer others to build a cache of frequently activated ties.)

Hypotheses About Salespeople's Effectiveness in Solution-Creation

H2a and H2b predict network effects for solution-creation. We predict that frequently activated work ties will be more important in the solution-creation task. Specifically, H2a predicts a strong positive relationship between salespeople's frequently activated work ties and effectiveness in solution-creation compared to frequently activated social ties, and H2b predicts a strong positive relationship between sales-

Table 3
Network Drivers of Effectiveness in Solution-Creation

	Model 1		Model 2		Model 3	
	β	t	β	t	β	t
Number of Social Ties						
Number of Frequently Activated Social Ties			0.141	1.107		
Number of Work Ties					-0.137	-0.697
Number of Frequently Activated Work Ties			0.434	3.087**	0.552	3.652**
Controls						
Education	-0.014	-0.077	0.010	0.084	0.007	0.056
Technical education	1.519	1.337	0.172	1.467	0.137	1.179
Industry experience	0.000	0.003	0.069	0.585	0.068	0.564
Location dummy variables	1 of 11*		0 of 11*		0 of 11*	
R	0.46		0.62		0.62	
N	78		78		78	
F-Value	1.334		2.492*		2.415*	

* $p < 0.05$; ** $p < 0.01$.

people's frequently activated work ties and effectiveness in solution-creation compared to simply a high number of work ties. The results of these hypotheses tests are shown in Table 3.

Model 2 Tests Hypothesis 2a. Model 1 includes the baseline control variables. Model 2, in which frequently activated ties (both work and social) were inserted, supports H2a. Model 2 explains significantly more variance than Model 1 ($F_{2,61} = 8.850$, $p = 0.0004$). Furthermore, we see the dominance of the frequently activated work ties ($\beta = 0.434$), compared to the social ties ($\beta = 0.141$), in predicting performance (comparing the β s directly, $z = 2.930$, $p = 0.0017$).

Model 3 Tests Hypothesis 2b. Drilling down, again we see support of the frequency of network tie interactions being more important than their mere existence. Model 3 contrasts the number of work ties with the number of frequently activated work ties, and in doing so, shows clear empirical support of H2b. Model 3 explains significantly more variance than Model 1 ($F_{2,61} = 8.341$, $p = 0.001$). The frequently activated work ties are superior in predicting performance ($\beta = 0.552$) compared to the mere existence of work ties ($\beta = -0.137$, comparing them, $z = 6.890$).

Hypotheses About Salespeople's Effectiveness in Closing the Deal

H3a, H3b, and H3c make predictions about salespeople's effectiveness in closing the deal. H3a predicts a strong positive effect for salespeople's frequently activated social ties on their

effectiveness in closing the deal, compared to simply a high number of social ties. H3b analogously predicts a strong effect for frequently activated work ties compared with a mere large number of work ties. H3c states that frequently activated social ties and frequently activated work ties are both important in predicting performance. The results of these hypotheses tests are presented in Table 4.

Model 2 Tests Hypothesis 3a. Model 1 provides the control variable baseline model. Model 2 examines the effect of the social ties—the number of social ties and the number of frequently activated social ties. The results support H3a. The model explains significantly more variance than the baseline model ($F_{2,59} = 3.808$, $p = 0.028$). Frequently activated social ties contribute significantly to predicting performance in closing ($\beta = 0.644$), and significantly more than the simple count of social ties ($\beta = -0.313$).

Model 3 Tests Hypothesis 3b. Model 3 compares the effect of the work ties—the number of work ties and the number of frequently activated work ties. The data support H3b. Model 3 explains significantly more variance than Model 1 ($F_{2,59} = 3.808$, $p = 0.028$). Frequently activated work ties contribute to predicting performance ($\beta = 0.356$) in this closing-the-deal phase, and they do so significantly more than simple counts of work ties ($\beta = -0.339$).

Model 4 Tests Hypothesis 3c. Model 4 contains all of the network ties—social and work related, and number versus frequently activated. With this comprehensive inclusion, Model 4 tests H3c. H3c is supported clearly in parts but only directionally

Table 4
Network Drivers of Effectiveness in Closing the Deal

	Model 1		Model 2		Model 3		Model 4	
	β	t	β	t	β	t	β	t
Number of Social Ties			-0.313	-0.918			-0.288	-0.865
Number of Frequently Activated Social Ties			0.644	1.722***			0.614	1.674***
Number of Work Ties					-0.339	-1.777	-0.395	2.128*
Number of Frequently Activated Work Ties					0.356	2.423*	0.235	1.574***
Controls								
Education	-0.096	-0.853	-0.090	-0.839	-0.083	-0.768	-0.085	-0.817
Technical education	0.067	0.624	0.089	0.865	-0.010	-0.090	0.044	0.410
Industry experience	0.028	0.248	0.073	0.674	0.080	0.728	0.121	1.126
Location dummy variables	3 of 11*		2 of 11*		2 of 11*		2 of 11*	
R	0.64		0.69		0.69		0.70	
N	76		76		76		76	
F-Value	3.203**		3.566**		3.608**		3.394**	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.10$.

in others. Frequently activated social ties ($\beta = 0.614$) and frequently activated work ties ($\beta = 0.235$) were both borderline significant contributors to predicting deal closes ($p < 0.1$; p -values that are perhaps understandable for field study data, but nevertheless are not as strong as our other results). The predictions that frequently activated ties should be more strongly positively related to performance over sheer numbers of ties were supported for both social and work ties (regression coefficients 0.614 versus -0.288 yields $z = 9.020$ and 0.235 versus -0.395 produces $z = 6.300$, respectively).

Just as Model 1 is nested in both Models 2 and 3, and Models 2 and 3 were each shown to be significant improvements over Model 1, Models 2 and 3 are also nested in Model 4, which allows another statistical comparison. Model 4 contains all network ties—work and social, frequently activated and mere counts, and interestingly, it does not explain significantly more variance than either Models 2 or 3 (both $F_{2,59} = 0.114$, n.s. [not significant]). This finding suggests some compensatory effects across the four network structures, though note that the correlations among the sets of network ties were modest (average $r = 0.30$).

DISCUSSION

This paper studies the relationship between salespeople's network embeddedness and their sales effectiveness across three main sales tasks—opportunity-identification, solution-creation, and closing the deal—in a high-tech electronic components market. This research is intended to contribute to the marketing literature in several ways. First, salespeople are

facing an increasingly knowledge-intensive sales environment. Understanding the challenges that they face and the resources they mobilize in overcoming those challenges are important for both the sales literature and practitioners. Second, our findings distinguish effects across different sales tasks that most salespeople in most sales contexts have to deliver. Third, the findings distinguish different kinds of network influences. The knowledge requirements for each sales task create unique challenges for salespeople, and our results clarify the contingencies between types of networks and network ties, and the particular resources required to overcome the challenges that arise during different sales tasks.

Drawing from the existing sales literature, three fundamental sales tasks were studied in depth. In this fast-paced business world, market conditions change very quickly and there are rapid fluctuations of availability and accuracy of information about new opportunities. As a result, during the opportunity-identification phase, salespeople have only a very short window to learn about a potential new sales opportunity. The next critical task, solution-creation, is to assemble the market offering in a way that would create the right solution for the right customer. Given the immensity of customers' knowledge requirements and the specialization and fragmentation of expertise, the critical challenge for the salespeople in this sales task is to find ways to acquire diverse and in-depth product knowledge (see Behrman and Perreault 1982). Finally, in the third main sales task that we studied, closing the deal, the salesperson's goal is to generate orders. The procedures that assign the elements of order to different departments necessitates that the salesperson coordinate and

ensure cooperation of diverse actors across departmental and organizational boundaries.

In addition to uncovering the optimal kinds of networks for addressing the challenges of each sales task, this study also revealed that effectively meeting these challenges required more than individual-level resources. Access to diverse knowledge resources made salespeople with active networks more effective in managing the various responsibilities inherent to today's increasingly knowledge-intensive sales environment.

Extensive efforts were made to test these relationships using sound network methodologies. This network study was comprehensive in obtaining the work and social tie measures from the salespeople as well as from every employee in each regional office. The objectivity and validity of the sociometric study was enhanced by collecting data on the performance measures from the salespeople's direct managers.

The sociometric study demonstrated that even after controlling for classic variables from the sales literature (e.g., human capital, environmental, organizational, and managerial factors), social networks absolutely drive salespeople's overall performance, and in fact explain a large amount of variance in salespeople's effectiveness in three main sales tasks.

Social network ties help drive performance in opportunity-identification. Work network ties contribute in solution-creation, understanding how to pull together a product and service combination that can meet the customer's unique needs. Both social and work networks are critical in contributing to the final phase—closing the deal. Our results confirm that this last phase is often the most logistically challenging, requiring the most, and most varied, of the salesperson's resources.

We believe this research illuminates both the nature of sales processes and the nature of network effects in sales. Currently, much of the literature posits that embeddedness is expected to improve economic outcomes, yet without specification as to the means by which this improvement occurs. We believe it to be an important contribution that we demonstrated that social network ties were sometimes helpful (in opportunity-identification and closing the deal) but sometimes superfluous (in solution-creation). Similarly, work network ties were sometimes useful (in solution-creation and closing the deal), but sometimes less so (in opportunity-identification). Thus, we developed and tested a contingency model of network resources and results. Specifically, the extent to which networks drive performance is contingent on the specific requirements of the sales task as well as the resources embedded in the network, that is, social or work related.

An important managerial implication is that social networks must be managed inside the firm in addition to managing relationships with external constituencies (such as customers). For all the attention garnered by "customer relationship management," we suggest expanding the relational concept

to accommodate the intraorganizational relationships that are critically supportive of outreach efforts. Even more clearly, the strong effects of frequently activated ties, compared to the mere number of extant ties, begin to suggest that salespeople are better off focusing their network efforts rather than spreading themselves thin across many players.

Clearly, it is the case that effective salespeople enact their networks. Successful salespeople understand the interdependencies among types of organizational members, and these links contribute directly and powerfully to the ultimate success of their sales efforts. Our research begins to illuminate which ties are potentially most useful in achieving different goals as the sales interactions progress.

Limitations

While we have made much of our full sociometric data collection efforts, and the ability to generalize beyond a single office, we acknowledge that this study was conducted within a single industry. We have no reason to believe that information diffusion occurs structurally differently in other industries, but of course, verification of that assumption requires empirical testing.

We also understand that marketing scholars who ascribe to different sales processes, such as those that comprise five or seven phases, may feel that our focus on three phases is insufficient for their purposes. We grant that limitation as well, but hope the results we have found would be equally relevant to their paradigms, albeit presumably covering only a subset of the phases of interest to them.

We are also gratified to have seen results that offer such clear distinctions between social and work-related network ties, as well as the difference between the basic count networks and the ties that are more frequently activated. It would be a useful exercise, both theoretically and managerially, to further decompose multiplex network patterns. For example, additional ties might measure interpersonal components versus technological connections—it may be unlikely, but if it could be shown that occasional Skype interactions or avatars (see Berthon et al. 2010) could be as effective in relationship management as salespeople flying around their territories, costs savings would be phenomenal and precious resources could be saved or reallocated.

Future Directions

We suggest that future studies compare our current findings with those obtained in other industries. We might expect that the results derived from our high-tech electronics company should "replicate" in another industry with similarly intense, fast-paced information needs such as financial services. Other industries that require rapid transmission of information, and

therefore the heavy reliance on internal networks, are those that suffer from disproportional service failures; perhaps when weather or mechanical difficulties delay flights, those front-line personnel who know who to contact to derive meaningful information will fare better (Gonzalez et al. 2010). In addition to seeking consistencies, one might also contrast our findings with industries with different characteristics. For example, it would be interesting to model sales networks for products that may superficially seem simpler, such as consumer packaged goods, yet whose sales are of sufficiently high volume that the sales presentations and resulting coordination are equally critical to the selling firm, and the promotions and deal packages from competitors are equally dynamic to the buying firm.

As challenging as the current data collection was, researchers could also collect additional data along several dimensions. First, researchers could explore the conceptual relationships that we developed in this paper throughout additional sales phases. Second, researchers could expand the data collection and modeling in the direction of multivariate planning—particular types of social ties and work-related ties, and adding ties that reflect even more constructs. Third, it is an academic truism theoretically, and difficult to execute practically, that these data would be further enriched by measuring the relationships between salespeople's network embeddedness and their performance longitudinally.

REFERENCES

- Ahearne, Michael, and Adam Rapp (2010), "The Role of Technology at the Interface Between Salespeople and Consumers," *Journal of Personal Selling & Sales Management*, 30, 2 (Spring), 111–120.
- Anderson, James C., and David W. Gerbing (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin*, 103 (3), 411–423.
- Anderson, Rolf E. (1996), "Personal Selling and Sales Management in the New Millennium," *Journal of Personal Selling & Sales Management*, 16, 4 (Fall), 17–32.
- Behrman, Douglas N., and William D. Perreault, Jr. (1982), "Measuring the Performance of Industrial Salespersons," *Journal of Business Research*, 10 (3), 355–370.
- Berthon, Pierre, Leyland Pitt, Wade Halvorson, Michael Ewing, and Victoria L. Crittenden (2010), "Advocating Avatars: The Salesperson in Second Life," *Journal of Personal Selling & Sales Management*, 30, 3 (Summer), 195–208.
- Bonoma, Thomas V. (1985), "Case Research in Marketing: Opportunities, Problems, and a Process," *Journal of Marketing Research*, 22 (May), 199–208.
- Bradford, Kevin D., Anne Stringfellow, and Barton A. Weitz (2004), "Managing Conflict to Improve the Effectiveness of Retail Networks," *Journal of Retailing*, 80 (3), 181–195.
- , Steve Brown, Shankar Ganesan, Gary Hunter, Vincent Onyemah, Robert Palmatier, Dominique Rouziès, Rosann Spiro, Harish Sujaan, and Barton Weitz (2010), "The Embedded Sales Force: Connecting Buying and Selling Organizations," *Marketing Letters*, 21 (3), 239–253.
- Brashear, Thomas G., James S. Boles, Danny N. Bellenger, and Charles M. Brooks (2003), "An Empirical Test of Trust-Building Processes and Outcomes in Sales Manager–Salesperson Relationships," *Journal of the Academy of Marketing Science*, 31 (2), 189–200.
- Brown, Jacqueline J., and Peter H. Reingen (1987), "Social Ties and Word-of-Mouth Referral Behavior," *Journal of Consumer Research*, 14 (November), 350–362.
- Burt, Ronald S. (2001), "Structural Holes Versus Network Closure as Social Capital," in *Social Capital*, Nan Lin, Karen Cook, and Ronald S. Burt, eds., New York: Aldine De Gruyter, 31–56.
- Castells, Manuel (2001), *The Internet Galaxy*, New York: Oxford University Press.
- Chatterjee, Sayan, Michael H. Lubatkin, David M. Schweiger, and Yaakov Weber (1992), "Cultural Differences and Shareholder Value in Related Mergers: Linking Equity and Human Capital," *Strategic Management Journal*, 13 (5), 319–334.
- Churchill, Gilbert A., Jr., Neil M. Ford, Steven W. Hartley, and Orville C. Walker, Jr. (1985), "The Determinants of Salesperson's Performance," *Journal of Marketing Research*, 22 (May), 103–118.
- Coleman, James S. (1988), "Social Capital in the Creation of Human Capital," *American Journal of Sociology*, 94 (Supplement), 95–120.
- Creyer, Elizabeth H., and William T. Ross, Jr. (1994), "Salesperson Impression and Strategy Formation," *Marketing Letters*, 5 (3), 225–234.
- Crittenden, Victoria L., Robert A. Peterson, and Gerald Albaum (2010), "Technology and Business-to-Consumer Selling: Contemplating Research and Practice," *Journal of Personal Selling & Sales Management*, 30, 2 (Spring), 103–109.
- Eisenhardt, Kathleen M. (1989), "Making Fast Strategic Decisions in High Velocity Environments," *Academy of Management Journal*, 32 (3), 543–576.
- Frenzen, Jonathan K., and Harry L. Davis (1990), "Purchasing Behavior in Embedded Markets," *Journal of Consumer Research*, 17 (June), 1–12.
- , and Kent Nakamoto (1993), "Structure, Cooperation, and the Flow of Information," *Journal of Consumer Research*, 20 (3), 360–375.
- Gabbay, Shaul M., and Ezra W. Zuckerman (1998), "Social Capital and Opportunity in Corporate R&D: The Contingent Effect of Contact Density on Mobility Expectations," *Social Science Research*, 27 (2), 189–217.
- Glazer, Rashi (1991), "Marketing in an Information-Intensive Environment: Strategic Implications of Knowledge as an Asset," *Journal of Marketing*, 55 (October), 1–19.
- Goldenberg, Jacob, Donald R. Lehmann, Daniela Shidlovski, and Michal Master Barak (2008), "Preference for New Product Information Sources," White Paper, Columbia University, New York, June.
- Gonzalez, Gabriel R., K. Douglas Hoffman, Thomas N. Ingram, and Raymond W. LaForge (2010), "Sales Organization Re-

- covery Management and Relationship Selling: A Conceptual Model and Empirical Test," *Journal of Personal Selling & Sales Management*, 30, 3 (Summer), 223-237.
- Granovetter, Mark (1973), "The Strength of Weak Ties," *American Journal of Sociology*, 78 (6), 1360-1380.
- Grayson, Kent (2007), "Friendship Versus Business in Marketing Relationships," *Journal of Marketing*, 71 (October), 121-139.
- Gundlach, Gregory T., and Albert A. Foer (2008), "Complexity, Networks, and the Modernization of Antitrust: The American Antitrust Institute's Roundtable on the Science of Complexity and Antitrust," *Antitrust Bulletin*, 51 (1), 1-15.
- Hansen, Morten T. (1999), "Knowledge Networks: Explaining Effective Knowledge Sharing in Multiunit Companies," *Organization Science*, 13 (3), 232-248.
- Hitt, Michael A., Leonard Bierman, Katsuhiko Shimizu, and Rahul Kocchar (2001), "Direct and Moderating Effects of Human Capital on Strategy and Performance in Professional Service Firms: A Resource-Based Perspective," *Academy of Management Journal*, 44 (1), 13-28.
- Homburg, Christian, John P. Workman, Jr., and Ove Jensen (2002), "A Configurational Perspective on Key Account Management," *Journal of Marketing*, 66 (April), 38-60.
- Hu, Li-tze, and Peter M. Bentler (1999), "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives," *Structural Equation Modeling*, 6 (1), 1-55.
- Hunter, Gary K., and William D. Perreault, Jr. (2007), "Making Sales Technology Effective," *Journal of Marketing*, 71 (January), 16-34.
- Iacobucci, Dawn, and Nigel Hopkins (1992), "Modeling Dyadic Interactions and Networks in Marketing," *Journal of Marketing Research*, 29 (February), 5-17.
- Ingram, Thomas N., and Danny N. Bellenger (1983), "Personal and Organizational Variables: Their Relative Effect on Reward Valences of Industrial Salespeople," *Journal of Marketing Research*, 20 (2), 198-205.
- Jaramillo, Fernando, Douglas B. Grisaffe, Lawrence B. Chonko, and James A. Roberts (2009), "Examining the Impact of Servant Leadership on Salesperson's Turnover Intention," *Journal of Personal Selling & Sales Management*, 29, 4 (Fall), 351-365.
- John, George, Allen W. Weiss, and Shantanu Dutta (1999), "Marketing in Technology-Intensive Markets: Toward a Conceptual Framework," *Journal of Marketing*, 63 (Special Issue), 78-91.
- Johnson, Jean L., Ravipreet S. Sohi, and Rajdeep Grewal (2004), "The Role of Relational Knowledge Stores in Interfirm Partnering," *Journal of Marketing*, 68 (July), 21-36.
- Johnson, Michael D., and Fred Selnes (2004), "Customer Portfolio Management: Toward a Dynamic Theory of Exchange Relationships," *Journal of Marketing*, 68 (April), 1-17.
- Jones, Eli, Steven P. Brown, Andris A. Zoltners, and Barton A. Weitz (2005a), "The Changing Environment of Selling and Sales Management," *Journal of Personal Selling & Sales Management*, 25, 2 (Spring), 105-111.
- , Andrea L. Dixon, Lawrence B. Chonko, and Joseph P. Cannon (2005b), "Key Accounts and Team Selling: A Review, Framework, and Research Agenda," *Journal of Personal Selling & Sales Management*, 25, 2 (Spring), 181-198.
- Knoke, David, and Song Yang (2007), *Social Network Analysis*, Thousand Oaks, CA: Sage.
- Lin, Chieh-Peng (2007), "To Share or Not to Share: Modeling Tacit Knowledge Sharing, Its Mediators and Antecedents," *Journal of Business Ethics*, 70 (January), 411-428.
- Mehra, Ajay, Andrea L. Dixon, Daniel J. Brass, and Bruce C. Robertson (2006), "The Social Network Ties of Group Leaders: Implications for Group Performance and Leader Reputation," *Organization Science*, 17 (1), 64-79.
- Moncrief, William C., and Greg W. Marshall (2005), "The Evolution of the Seven Steps of Selling," *Industrial Marketing Management*, 34 (1), 13-22.
- Moon, Mark A., and Gary M. Armstrong (1994), "Selling Teams: A Conceptual Framework and Research Agenda," *Journal of Personal Selling & Sales Management*, 14, 1 (Winter), 17-30.
- Narayandas, Das, and V. Kasturi Rangan (2004), "Building and Sustaining Buyer-Seller Relationships in Mature Industrial Markets," *Journal of Marketing*, 68 (July), 63-77.
- Onyemah, Vincent, Scott D. Swain, and Richard Hanna (2010), "A Social Learning Perspective on Sales Technology Usage: Preliminary Evidence from an Emerging Economy," *Journal of Personal Selling & Sales Management*, 30, 2 (Spring), 131-142.
- Plank, Richard E., and David A. Reid (1994), "The Mediating Roles of Sales Behaviors: An Alternative Perspective of Sales Performance and Effectiveness," *Journal of Personal Selling & Sales Management*, 14, 3 (Summer), 43-56.
- Plouffe, Christopher R., and Donald W. Barclay (2007), "Salesperson Navigation: The Intraorganizational Dimension of the Sales Role," *Industrial Marketing Management*, 36 (4), 528-539.
- , Srinivas Sridharan, and Donald W. Barclay (2009), "Exploratory Navigation and Salesperson Performance: Investigating Selected Antecedents and Boundary Conditions in High-Technology and Financial Services Context," *Industrial Marketing Management*, 39 (4), 538-550.
- Podolny, Joel M., and Karen L. Page (1998), "Network Forms of Organizations," *Annual Review of Sociology*, 24, 57-76.
- Podsakoff, Philip M., and Scott B. MacKenzie (1994), "Organizational Citizenship Behaviors and Sales Unit Effectiveness," *Journal of Marketing Research*, 31 (August), 351-363.
- Powell, Walter W. (1990), "Neither Market Nor Hierarchy: Network Forms of Organizations," in *Research in Organizational Behavior*, vol. 12, Barry M. Staw and L.L. Cummings, eds., Greenwich, CT: JAI Press, 295-336.
- , and Kaisa Snellman (2004), "The Knowledge Economy," *Annual Review of Sociology*, 30, 199-220.
- , Kenneth W. Koput, and Laurel Smith-Doerr (1996), "Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology," *Administrative Science Quarterly*, 41 (1), 116-145.

- Price, Linda L., and Eric J. Arnould (1999), "Commercial Friendships: Service Provider-Client Relationships in Context," *Journal of Marketing*, 63 (October), 38-56.
- Rentz, Joseph O., C. David Shepherd, Armen Tashchian, Pratibha A. Dobholkar, and Robert T. Ladd (2002), "A Measure of a Selling Skill: Scale Development and Validation," *Journal of Personal Selling & Sales Management*, 22, 1 (Winter), 13-21.
- Richards, Keith A., and Eli Jones (2009), "Key Account Management: Adding Elements of Account Fit to an Integrative Theoretical Framework," *Journal of Personal Selling & Sales Management*, 24, 4 (Fall), 305-320.
- , William C. Moncrief, and Greg W. Marshall (2010), "Tracking and Updating Academic Research in Selling and Sales Management: A Decade Later," *Journal of Personal Selling & Sales Management*, 30, 3 (Summer), 253-271.
- Ronchetto, John R., Jr., Michael D. Hutt, and Peter H. Reingen (1989), "Embedded Influence Patterns in Organizational Buying Systems," *Journal of Marketing*, 53 (October), 51-62.
- SeEVERS, Matthew T., Steven J. Skinner, and Scott W. Kelley (2007), "A Social Network Perspective on Sales Force Ethics," *Journal of Personal Selling & Sales Management*, 27, 4 (Fall), 341-353.
- Steward, Michelle D., Beth A. Walker, Michael D. Hutt, and Ajith Kumar (2010), "The Coordination Strategies of High-Performing Salespeople: Internal Working Relationships that Drive Success," *Journal of the Academy of Marketing Science*, 38 (5), 550-566.
- Troy, Lisa C., Tanawat Hirunyawipada, and Audesh K. Paswan (2008), "Cross-Functional Integration and New Product Success: An Empirical Investigation of the Findings," *Journal of Marketing*, 72 (November), 132-146.
- Üstüner, Tuba, and David Godes (2006), "Better Sales Networks," *Harvard Business Review*, 84 (7-8), 1-10.
- Uzzi, Brian (1996), "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect," *American Sociological Review*, 61 (August), 674-698.
- Van Maanen, John (1979), "Reclaiming Qualitative Methods for Organizational Research: A Preface," *Administrative Science Quarterly*, 24 (December), 520-526.
- Venkatesh, R., Goutam Challagalla, and Ajay K. Kohli (2001), "Heterogeneity in Sales Districts: Beyond Individual-Level Predictors of Satisfaction and Performance," *Journal of the Academy of Marketing Science*, 29 (3), 238-254.
- Vinchur, Andrew J., Jeffrey S. Schippmann, Fred S. Switzer, III, and Philip L. Roth (1998), "A Meta-Analytic Review of Predictors of Job Performance for Salespeople," *Journal of Applied Psychology*, 83 (4), 586-597.
- Walker, Orville C., Jr., Gilbert A. Churchill, Jr., and Neil M. Ford (1977), "Motivation and Performance in Industrial Selling: Present Knowledge and Needed Research," *Journal of Marketing Research*, 14 (2), 156-168.
- Weitz, Barton A. (1978), "The Relationship Between Salesperson Performance and Understanding Consumer Decision Making," *Journal of Marketing Research*, 15 (November), 501-516.
- (1981), "Effectiveness in Sales Interactions: A Contingency Framework," *Journal of Marketing*, 45 (Winter), 85-103.
- , and Kevin D. Bradford (1999), "Personal Selling and Sales Management: A Relationship Marketing Perspective," *Academy of Management Journal*, 27 (2), 241-254.
- , Stephen Castleberry, and John Tanner (2008), *Selling: Building Partnerships*, 7th ed., New York: McGraw-Hill.
- Workman, John P., Jr., Christian Homburg, and Ove Jensen (2003), "Intraorganizational Determinants of Key Account Management Effectiveness," *Journal of the Academy of Marketing Science*, 31 (1), 3-21.

APPENDIX A NETWORK QUESTIONS

Work Networks

Please think about how often you talk or e-mail one on one with each Alpha employee listed on the response sheet about work-related matters. Some weeks you might be e-mailing or talking with one person very intensely (especially when you are working together on a specific customer or order, etc.), and other weeks you might not be communicating at all. And with some people you might generally communicate more than with others. Please respond to the question below thinking about your *average* communication frequency with the person:

On average, how frequently do you communicate (talk or e-mail) one on one about work-related matters with the Alpha employee listed on the attached response sheet? (in terms of number of times in two weeks)

Social Networks

Socializing includes all nonwork activities such as going out for dinners, coffee, or drinks; playing sports or attending sporting events; socializing with families; and so on. (Please do *not* consider events sponsored by Alpha as socializing.) Please respond to the question below thinking about your *average* socializing frequency with the person:

On average, how frequently do you socialize with the Alpha employee listed on the attached response sheet?

Scales

The exploratory interviews indicated that the frequency of tie activation in work versus social networks varied considerably. Having "frequent" interactions in work networks implied much more tie activation than that in socialization networks. In order to reflect these differences, each network scale was devised separately. Frequency of interacting in work networks was measured over a two-week duration. Specifically, the scale (and codes) were as follows: never (0), less than once in two weeks (0.5), once in two weeks (1), once a week (2), three times a week (6), daily (14), and couple of times a day (28). Social networks were measured in terms of tie activation per month. The scale read (and codes) were as follows: never (0), less than once in two weeks (0.5), once in a month (1), once in two weeks (2), once a week (4), twice a week (8), and more than twice a week (12).

APPENDIX B SALES STAGE PERFORMANCE QUESTIONS

Overall Performance

1. All things considered, this salesperson is *outstanding*.
2. This salesperson *performs* his or her job the way I like to see it performed.
3. This salesperson is one of the *most* valuable assets of our group.

Opportunity Identification

1. This salesperson is among the first to find out when there is a *high potential new customer* in the market.
2. This salesperson learns about high potential *new customers* in the *very early stages* of their design cycles.
3. This salesperson identifies fewer *high potential new customers* than an average salesperson under my supervision. (reverse coded)

Solution Creation

1. This salesperson delivers the *total number of registrations* I expect from him or her.
2. This salesperson hits his or her registration targets for *most of our key manufacturers'* components.
3. This salesperson succeeds in attaining his or her registration targets in *most of his or her* customers.

Order Generation

1. This salesperson *rarely* generates sales dollars for the components that he or she helped design on customers' new boards. (reverse coded)
2. This salesperson has *trouble turning* his or her design efforts into sales dollars. (reverse coded)
3. This salesperson closes the orders on *most* of the components he or she helped design.