SALES TECHNOLOGY, RELATIONSHIP-FORGING TASKS, AND SALES PERFORMANCE IN BUSINESS MARKETS

by

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ABSTRACT

GARY K. HUNTER: Sales Technology, Relationship-Forging Tasks, and Sales Performance (Under the direction of William D. Perreault, Jr.)

The purpose of this dissertation is to propose theory, develop measures, and test models of the relationship between technology usage and sales performance in a business market context. The research addresses the complex and costly managerial challenge of integrating technology into work processes. It contributes to and draws on the scholarly literature on technology and productivity, inter-organizational relationships, smart selling, relationship marketing, and sales performance. The dissertation reports the results and discusses the implications of two field studies. Study 1 develops an overall measure of sales technology usage and incorporates a test of the technology-to-performance relationship in the context of "smart selling" constructs considered in the traditional selling literature. However, just as use of sales technology is new, so too is the relationship-building context in which most modern business market salespeople operate. So, the dissertation also introduces boundary-blurring theory (BBT)—a new theory on inter-organizational relationships. Study 2 tests BBT propositions about how technology empowers relationship-forging tasks that help salespeople build more effective relationships with their business customers. This dissertation shows that three relationship-forging tasks—sharing market expertise, proposing integrative solutions, and coordinating activities—are essential to

effective relationship-building and that they, along with sales planning, represent primary means through which technology affects relationship effectiveness. Study 2 moves beyond general sales technology usage to consider the effects of three primary types of technology usage: accessing, analyzing, and communicating information. Study 2 evaluates how those types of sales technology usage affect sales planning as well as both relationship effectiveness (external performance) and administrative efficiency (internal performance). Both studies also evaluate the effect of different antecedents of sales technology usage including buyer encouragement, training effectiveness, company sales technology support, and salesperson experience. Sales technology usage explains a significant portion of the variation in both internal and external performance—whether the salesperson works in a traditional or a relational selling context. In a traditional context, the findings support the view that technology's primary influence on external performance occurs indirectly through its effect on sales planning and it directly affects one's administrative efficiency. In a relational context, technology affects external performance by facilitating or enabling the salesperson's accomplishment of relationship-forging tasks—which along with sales planning—explained 46 percent of the variation in sales relationship effectiveness. In a broad sense, both studies also demonstrate ways that an organization can diagnose and assess returns from investments in technology.

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CHAPTER 1

INTRODUCTION AND OVERVIEW

Today's business-to-business selling environment is radically different from the one that existed a decade ago. At that time, the focus of most academic research and business practice was on salesperson-buyer dyads in which each party sought to optimize his or her firm's outcomes in an arm's length exchange process. By contrast, today manufacturers often dedicate salespeople or a sales team to specific accounts to develop closer relationships by finding shared solutions to common problems. Consequently, perspectives of both marketing managers and academicians concerning the role of the salesforce are changing.

Sales managers must now manage several new areas of responsibility, including data-driven selling, relationship marketing, category management, and sales technology. While academic research has begun to address many of these topics, marketing scholars have devoted little attention to sales technology and how it is changing the sales process. Yet, managing sales technology and its impact is critical to the success of firms that compete in the new selling environment.

Increasingly, salespeople rely on information technology to accomplish a variety of tasks in today's relational selling environments. Further, these technologies can be very expensive. For some sales tasks, technology simply *automates* what previously was handled in other ways—but technology makes completing the task faster, cheaper, or better. Equally important, technology *enables* the salesperson to accomplish tasks in the new selling environment that previously were not possible. For example, today's salesperson may be responsible for analyzing checkout-scanner data for a complete product category from the perspective of a specific retail customer, to identify opportunities that are mutually beneficial to both the manufacturer and the retailer.

Technology facilitates and enables so many sales-role tasks that it potentially impacts the whole sales organization. Often, it stimulates a re-engineering process that results in changes in salesforce recruiting, training, motivation, and supervision. Appropriate technology improves productivity so a salesperson can more profitably manage larger accounts or more accounts, but effective application of technologies can be expensive and difficult to implement. Neither marketing managers nor scholars know enough about how investments in technology impact salesperson performance. Progress towards addressing that question is a basic focus of this research. Of course, a single study cannot adequately address the extensive influence of technology on the sales organization. However, this dissertation represents a critical first step towards a more comprehensive view of sales technology's role in the business-to-business sales process.

The primary objective of this research is to identify, measure, and evaluate the effects of salespeople's use of information technology on their performance. In support of that

primary objective, this research advances a conceptual model that incorporates a set of relationship-forging tasks, which we posit to be the primary means through which sales technology impacts performance. For example, one relationship-forging task is *proposing integrative solutions,* a relationship-forging tasks that refers to the extent to which salespeople propose recommendations that are mutually beneficial to the selling firm, the buying firm, and the buying firm's customers. The use of sales technology often facilitates or makes the identification of such solutions possible by providing the salesperson with a means of accessing, analyzing, and communicating information about complex markets. In turn, proposing integrative solutions helps salespeople build stronger relationships in the channel.

This research offers a conceptual framework that will give both managers and scholars a better understanding of how sales technology can and should improve salesperson performance. From a methodological perspective, the research also demonstrates an approach to better diagnose whether a firm is getting adequate returns from its investments in sales technology. This research should also help the marketing manager better assess the potential value of a prospective sales technology for the organization—prior to a costly investment in that technology.

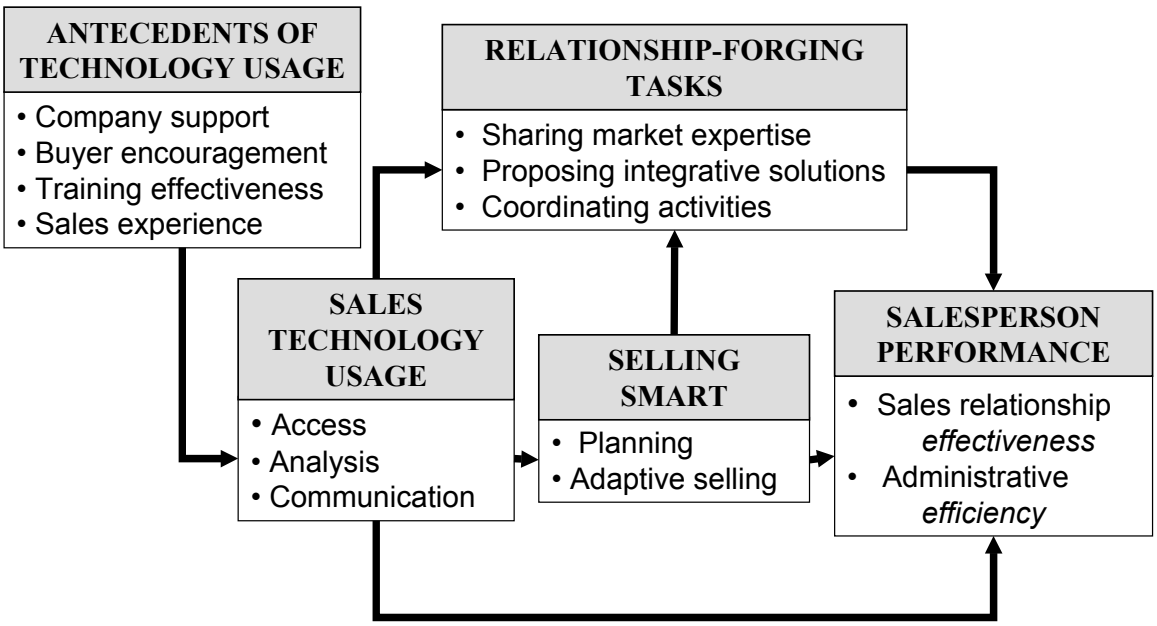
In this chapter, we discuss the scholarly contributions and managerial relevance of this research. Chapter 2 proposes a selling smart-with-technology model and reports an empirical test of the model in a field sales context. Chapter 3 introduces boundary-blurring theory—a new theory on studying inter-organizational relationships. Chapter 4 evaluates a model that is based on both the boundary-blurring theory and the implications of the selling

smart with technology mode. It considers the indirect effects through relationship-forging tasks of three types of uses of technology—accessing, analyzing, and communicating information—on salesperson efficiency and effectiveness. Finally, Chapter 5 provides concluding remarks.

Scholarly Contributions

This dissertation integrates perspectives from five major streams of research in the literature: information technology and productivity, marketing and technology, selling smart, salesperson performance, and relationship marketing. Figure 1.1 provides a broad overview of the constructs and relationships that we will examine. We will elaborate on the specific

FIGURE 1.1
Proposed Conceptual Model of Technology-to-Performance Relationship



hypothesized relationships in later chapters. Here, we introduce the general logic, consider how it relates to past research, and briefly outline the scholarly contributions of the proposed model. We expand on these topics in subsequent chapters.

Most of the technology-related literature in sales fits into two broad classifications. Some work focuses on automation and how salespeople use individual tools (for example, see Collins 11-article series 1984-91 or Swenson and Perrella 1992). Other work underscores the importance of technology to marketing/sales management at a conceptual level (Capon & Glazer 1987; Wedell and Hempeck 1987; Glazer 1991). This dissertation broadens from a descriptive focus on individual technologies to a more theoretically driven conceptualization of the mechanisms by which technology enhances and changes the sales function—both in a traditional selling-interaction context and in today's relational context.

The "smart selling" literature advances the notion that effective salespeople tailor their behaviors to specific buyer interactions (Sprio and Weitz 1990) and plan for those interactions (Sujan, Weitz, and Kumar 1994). The stream of research on "smart selling" dates back nearly two decades to Weitz's (1978) pioneering contributions. We adopt two selling-tasks constructs from this literature: adaptive selling behaviors and planning for the sale (Gwin and Perreault 1981; Sujan, Weitz, and Kumar 1994). We look at how use of technology can enhance these smart selling tasks, and through them, affect sales performance. However, these tasks are only part of the modern challenges of creating and maintaining relationships.

We consider the modern relationship-building process in more detail and introduce a new theory—boundary-blurring theory—that helps transition the research reported in Study 1 to that reported in Study 2. Boundary-blurring theory (BBT) posits that it is not people that form the boundaries of an organization, but rather the activities of individuals within an organization that form its boundaries. So, boundaries between or among organizations may not be fixed—depending on how activities are shared. Thus, boundaries can be blurred through the conduct of mutually beneficial activities and/or by sharing responsibilities for activities of joint importance. We posit key activities that blur boundaries—thereby making salespeople more effective at relationship-building—and refer to them as relationship-forging tasks.

Specifically, in Study 2, we conceptualize and develop three measures for three crucial relationship-forging tasks: sharing market expertise, proposing integrative solutions, and coordinating activities. *Sharing market expertise* refers to the extent to which salespeople develop and share their knowledge of the product-market both with their associates and with their customers. *Proposing integrative solutions* refers to the extent to which salespeople propose recommendations that are mutually beneficial to the selling firm, the buying firm, and the buying firm's customers. *Coordinating activities* refers to the extent to which salespeople coordinate the activities of members of the selling firm with those of members from the buying firm. Not only do we evaluate measures of these relationship-forging tasks, but we also evaluate their effects on relationship outcomes.

We draw on the literature on sales performance (see Brown and Peterson 1993 for a meta-analysis). More specifically, we adapt and update elements of widely used measures of

salesperson performance (Behrman and Perreault 1982). Based on consideration of the new sales role, in Study 1, we develop measures for three aspects of salesperson performance: sales relationship effectiveness, market expertise, and administrative efficiency. *Sales relationship effectiveness* refers to *outcomes* of a favorable relationship between the selling and buying firms. Examples include "convincing customers that I understand their unique concerns" and "working out solutions to a customer's questions or objections." *Market expertise* is a measure of the salesperson's knowledge concerning critical facets of the product-market including product offerings from the selling firm and its competitors as well as the buying firm and the buyer firm's competitors. An example is "knowing the benefits and features of competitors' products." *Administrative efficiency* refers to the salesperson's ability to complete required, non-selling related activities in a timely manner. "Submitting required reports on time" is a performance outcome that exemplifies administrative efficiency.

Study 2 proposes, measures, and evaluates the effects of three key underlying types of sales technology uses: accessing, analyzing, and communicating information. These types cut across individual hardware or software tools and apply to both existing and future technologies. We argue that the main impacts of the uses of technology on sales relationship effectiveness are through relationship-forging tasks.

Managerial Relevance: Sales Technology for Consumer Packaged Goods Manufacturers

It's useful to consider a brief example to illustrate the application of the proposed sales technology-to-performance model in a managerial context. Consider sales technology

from the perspective of the modern consumer packaged goods manufacturer. Efficient consumer response channels depend upon effective collaborative relationships between manufacturers and resellers, including category management. Since effective category management should be a data-driven, analytically intense process, the relationship-forging salesperson must use information to analyze marketing mix alternatives and to know how to balance the objectives of his/her organization with the reseller's needs. Although earning buyer support for the salesperson's recommendations will always require persuasive selling skills, this new task setting also requires strong technology skills and new relationship-forging activities.

A central issue for the packaged-goods manufacturer is how to capitalize on opportunities for relationship building afforded by the application of sales technology. The issues here go beyond simply buying laptops for the salesforce. For example, in order to implement what may seem like a simple data-analysis task, the manufacturer must invest in recruiting and training of salespeople who have skills that in the past were more typically found in market researchers. In addition to its investments in people, the manufacturer must support an abundance of different new sales technologies ranging from e-mail, videoconferencing, and electronic sales presentation systems to development of proprietary databases, software applications, and data capture systems.

So, from a managerial perspective, the sales technology issue is both complex and costly. Thus, managing technology innovations within the salesforce represents one of the most challenging issues confronting packaged goods manufacturers. This research provides sales managers with a framework that has both diagnostic and visionary value applicable to

this and many other “real world” settings. We conduct two studies in this research to evaluate the mechanisms through which technology affects key aspects of performance and report the results of those studies in Chapters 2 and 4.

In Study 1, which is outlined in Chapter 2, we administered a questionnaire to salespeople who work for a well-known, successful consumer packaged-goods company. Our findings support the hypothesis that using sales technology improves salesperson performance, both directly and indirectly—through sales planning. Study 1 also supports our hypothesized antecedent relationships for sales experience, company support, and buyer encouragement to use technology. We build upon many of the measures and findings from Study 1 and the ideas outlined in Boundary-Blurring Theory (Chapter 3) in Study 2, which is reported in Chapter 4.

Chapter 2

STUDY 1: SALES TECHNOLOGY, SELLING SMART, AND SALES PERFORMANCE IN BUSINESS MARKETS

CHAPTER ABSTRACT

Information technology (IT) management is concerned with coordinating the relationship between the business domain and the information technology domain (Sambamurthy and Zmud, 1992). Study 1 focuses on IT management within a set of work processes that represent an important element of that business domain—the selling function.

Today, many sales reps rely on an array of information technologies that were hardly imagined even a decade ago. This research examines the impact of sales technology usage on individual salesperson behavior and performance. It presents a parsimonious selling-smart-with-technology conceptual model. The model specifies key antecedents to sales technology usage and suggests direct and indirect effects of sales technology usage on sales planning, adaptive selling, and three specific aspects of sales performance (sales relationship effectiveness, market expertise, and administrative efficiency). The paper then discusses the logic of the relationships hypothesized in the model and reports the results of a path-analysis test of those relationships based on data

collected from sales representatives of a consumer package-goods firm. Study 1's findings support the model and the idea that sales technology usage improves sales performance, both directly and indirectly by enhancing smart selling. The framework developed in the research contributes a new, readily generalizable way to think about sales technology in the context of theories of the selling process and, at the same time, in a more general sense, offers Information Systems (IS) managers a practical approach for diagnosing the effectiveness of information technologies that an individual business function is implementing.

INTRODUCTION

Rapid advances in information technology are having a profound impact on the activities and performance of the modern sales organization. Information technology (IT) management is concerned with coordinating the relationship between the business domain and the information technology domain (Sambamurthy and Zmud, 1992). Relentless global competition and increasingly demanding business customers mandate both effective and efficient response from sales organizations. Concurrent with increasing demands that reshape sales tasks, advances in IT create opportunity for both service and cost differentiation between competing firms. Thus, for both IS and sales managers, the issue is paramount to the firm's success.

Several scholars have argued that IT adds economic value to a firm through either differentiation of services or reductions in costs (*cf.*, Bakos and Treacy 1986; McFarlan 1984). The selling function, itself, can be viewed as a service. Thus, effective

IT management within the selling function provides value through either differentiation of the selling function or reducing selling costs.

The common objective of widespread adoption of relationship marketing practices is to build more effective relationships. Given these new objectives, changes in the sales role, and rapid advances in information technology, envision a day in the life of a typical customer business development rep in the consumer packaged goods industry:

> Over a hasty breakfast, she reviews the day's events on her laptop's organizer, logs on to the company Intranet, and sorts through the dozen e-mail messages she finds there. One is from a buyer for a supermarket chain. He's worried that his store's sales in the disposable diaper category are off 10 percent and wants to know how the rep can help. Working from her home PC, the rep dials into an online database and downloads sales trend data for the chain and its competitors. A spreadsheet analysis of the data suggests that the chain is losing sales to new competition in the category from warehouse clubs. Next, the rep places a conference call with a diaper brand manager and a company category consultant to seek their advice. She then prepares a written recommendation that the buyer include and frequently promote larger size diaper packages of both her company's and competitors' brands in the chain's merchandise mix. She also prepares a PowerPoint presentation, complete with full-color graphics and a proposed shelf space planogram, which she will deliver to the buyer on her laptop PC at a later meeting. Before leaving home, the rep e-mails an advance copy of the report to the buyer and prints a color copy for her manager. On her

way to a meeting with another account, she gets a page from the supermarket buyer, and calls back on her cellular phone. The buyer is impressed with the recommendations and wants to move along quickly if the meeting to discuss the proposal can be moved forward.

This rep relies daily on an array of software and hardware that were hardly imagined even a decade ago. The information-technology explosion has put new software for spreadsheet analysis, electronic presentations, time management, database access, sales forecasting, customer contact and shelf-space management at the salesperson's fingertips. New but now commonplace hardware includes everything from cellular phones, fax machines, Intranet servers, laptop computers, and pagers to personalized videoconferencing systems. Further, as our introductory case suggests, in many situations these technologies are dramatically changing the face of personal selling.

Despite these changes, there has been relatively little published empirical research that investigates the impact of sales technology on salesperson activities and performance. Furthermore, we need research that proposes practical means through which both IS and sales managers can diagnose IT effectiveness within their own sales organizations. As a step toward filling this void, this research examines the impact of sales technology usage on salesperson performance. It focuses on how information technology affects individual selling behaviors. We first present a parsimonious conceptual model—a selling-smart-with-technology model—that specifies key antecedents to sales technology usage and suggests direct and indirect effects of sales

technology usage on sales planning, adaptive selling, and sales performance. We discuss relevant (normative) relationships contained in the model and then use a cross-sectional research design to test the model. The framework developed in the research contributes a new, readily generalizable way to think about information technology in the context of theories of the selling process and, at the same time offers managers a practical approach for diagnosis of the effectiveness of sales technologies a sales organization is implementing. We conclude with a discussion of implications for managers and scholars.

PREVIOUS RESEARCH ON INFORMATION TECHNOLOGY AND SALES PERFORMANCE

Despite the growing importance of information technology, there is little published research that directly evaluates the impact of such technology on salesperson activities and performance. Past research from the marketing, information systems, strategy, and economics literatures that is most relevant falls in one of two streams: (1) firm-level or industry-level consequences of investment in technology and (2) sales organization-level prescriptions focused on innovative opportunities to use new technologies.

In the late 1980's, studies conducted by Stephen Roach, the chief economist at Morgan Stanley, found that firm spending on technology had no relationship to firm productivity—a finding later dubbed the "Roach productivity paradox" (see Cohen (1995) for a review and discussion of these findings). While some studies supported Roach's findings (*cf.,* Powell and Dent-Micallef 1997; Weill 1992), other studies have

reported a positive relationship between technology spending and productivity, contradicting Roach's findings (*c.f.*, Brynjolfsson and Hitt 1993; Krueger 1993; Sharda, Barr, and McDonnell 1988). Thus, a growing body of controversial evidence on the technology-to-performance relationship exists (for reviews see Hitt and Brynjolfsson 1996; Willcocks 1992; Wilson 1995). Others have developed more elaborate models of the technology-to-performance relationship by going beyond the direct relationship between technology investments and performance—the technology imperative—to evaluate managerial choices that mediate the technology-to-performance relationship within an industry—the organizational imperative (Francalanci and Galal 1998). Studies in this stream have typically used the firm as the unit of analysis and have measured the relationship between the firm's total spending and its productivity (measured broadly as a ratio of firm outputs to inputs).

Moving beyond information technology's impact on productivity in individual firms, some scholars have studied the impact of information technology on overall industries. For instance, based on an industry-level analysis, Segars and Grover (1996) document structural changes in industries following strategic investments in information technology.

Hitt and Bryjolfsson (1996) provide a general assessment of the value of information technology and argue that contradictions in findings about that value may stem from researcher's use of different theoretical perspectives—ranging from theories of production and competitive strategy to theories of consumer behavior. Their focus, like the focus of most of the rapidly growing body of literature on information

technology, is on the financial return or efficiency gains from investing in technology rather than a focus on a specific business function, such as the sales function addressed herein.

In contrast to broad research on firm-level or industry-level relationships between technology spending and business returns, some marketing scholars have focused on sales-force automation, with a special emphasis on the usage and impact of specific information technology tools. For example, between 1984 and 1990 Collins and his colleagues published an insightful and forward-looking series of articles on microcomputer applications in personal selling and sales management; illustrative articles from the series include Collins (1984, 1985, 1989), Collins, Carey, and Mauritson (1987), and Collins and Schibrowsky (1990). These articles focused on and evaluated proposed normative uses and potential benefits of individual technologies from spreadsheets to contact management software. In a similar vein, Wedell and Hempeck (1987) reviewed a wide variety of individual technologies and proposed a classification system to organize them. Their conceptualization of sales force automation focuses on the benefits (such as increased productivity, improved customer relations, and accurate and timely reporting) to a firm that result from the application of hardware and software.

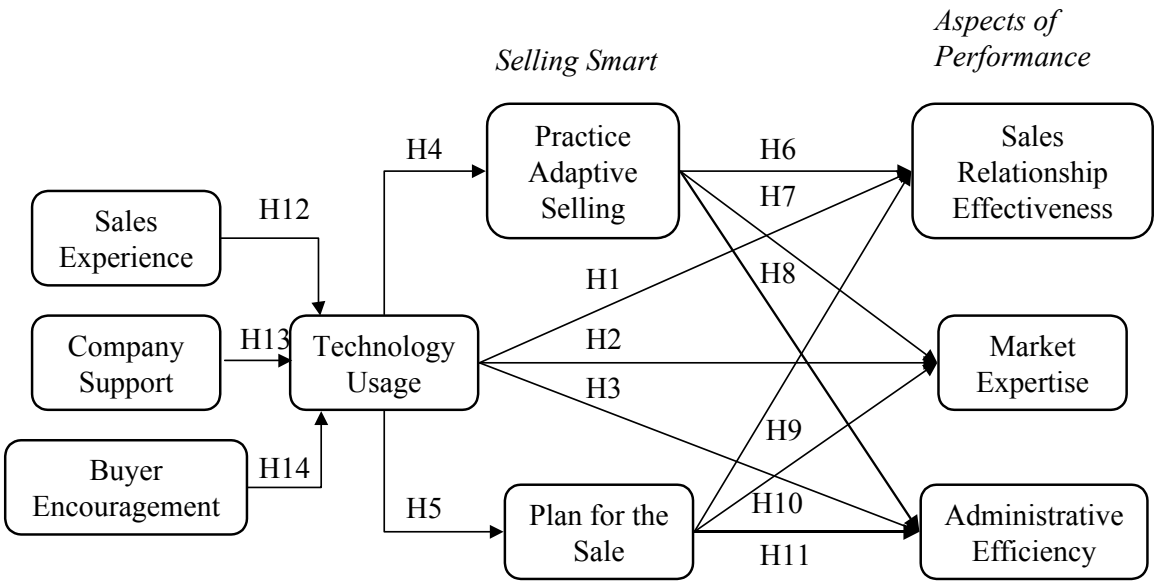
This forward-looking work on sales automation made an important contribution by informing both sales scholars and prospective users about the functionality of specific sales technology tools, stimulating attention to their potential benefits, and prompting adoption in a number of organizations. On the other hand, in spite of the lag

since that work was published, there has been little published research either on conceptualization or empirical evaluation of how sales technology usage affects salesperson process and performance or more generally on how IS or sales managers could model those effects That is the contribution of this research.

THE CONCEPTUAL MODEL

Figure 2.1 overviews a conceptual model of some key antecedents and consequences of sales technology usage. The model specifies three constructs—buyer encouragement, company support, and experience—as antecedents of sales technology usage. Sales technology usage in turn affects various aspects of salesperson performance, both directly and indirectly through its impact on the salesperson's "selling smart" activities. The following sections discuss the model in more detail.

FIGURE 2-1
The Selling Smart with Technology Model of Sales Performance



Sales Technology Usage

The rationale for sales-force automation is that some sales tasks can be done more quickly, cheaply, or effectively through the application of information technology. Automation typically focuses on facilitating tasks that salespeople previously handled in other ways. Automation of current tasks is important, but when considering sales technology, automation should not be the singular focus. In many cases sales technology goes beyond automation and enables a salesperson to do things that previously were not possible. For example, instant availability of online sales data for a specific retailer and specific outlets—and tools to analyze it—give the salesperson a basis on which to create proposals that are specific to the customer's unique problems and opportunities. Thus, we define sales technology as the application of information-

related hardware and software that is intended to facilitate or enable the performance of sales tasks. Scholars define IT use as the application of IT within an organization's operational and strategic activities (Ives and Jarvenpaa 1991). Sales technology usage is the extent to which salespeople blend information technology into their sales jobs.

There are many factors that may impact the use of sales technology. In that regard, adoption of sales technology is like the adoption of innovations in general. Rogers' (1962) pioneering work on diffusion of innovations, for example, identifies general characteristics of an innovation that tend to speed its acceptance. Drawing on Rogers' logic (and framing it in a way that is consistent with the Fishbein and Ajzen (1975) model), Davis (1989) proposes a technology acceptance model. This model, which has been applied in evaluating technology in non-sales settings, posits that the key factors that impact technology acceptance (usage) fall into two major categories: (1) perceived ease of use and (2) usefulness. There are a number of possible antecedents to technology usage that are at the same time consistent with this general theorizing but also more specific to the sales context. For parsimony, our model considers three key factors that are relevant across most sales situations: company support, buyer encouragement, and sales experience.

Scholars have long noted the importance of management support to systems success (Cerveny and Sanders 1986; Igbaria 1994; Lucas 1978). Within a large firm context, previous research found that management practices affect IT use (Boynton, Zmud, and Jacobs 1994). Other research on personal computer acceptance factors in small firms may apply to larger firms. For example, researchers found positive

relationships between management support in small firms and personal computer acceptance (Igbaria, Zinatlli, and Cragg, and Cavaye 1998; Igbaria, Guimaraes, and Davis 1995). Since management support, in that research, typically refers to the views of top managers, such as the CEO, the authors argued that in smaller firms, managers have more influence due to their proximity to and direct interaction with employees within the firm than do managers in larger firms. Here, we extend that logic to larger firms by arguing that employees in larger firms may attribute their perspectives on technology support to the company at large. That is, management support is often conveyed through equally proximate and interactive middle managers. Thus, instead of management support, the more generalized construct proposed here is company support.

Company support of sales technology—the extent to which a firm provides support that meets salespeople's perceived need for information technology—should affect ease of use. The type of support might take a variety of forms. At the lower end of the spectrum a company could provide its salespeople with access to some technology and say, "here you go." At the other end, support could include development of custom systems, extensive training, and changes in the systems of evaluation and compensation. More effective support should both be recognized by sales reps and make the technology easier to use. Moreover, to the extent that support signals the importance that management places on such technology, it may also affect salesperson perceptions of usefulness.

Past research on extraorganizational factors focused primarily on external support and training (*c.f.,* Igbaria et. al. 1997). Salespeople, in their boundary spanning

roles, have higher interaction with external constituents, their customers, than do other non-boundary spanning personnel. Social influence theory (Fulk, Schmitz, and Steinfield. 1990) posits that social influences can positively or negatively influence one's attitudes, choices, and use of information technologies. Past empirical research supports the theory (e.g., Fulk 1993; Fulk and Boyd 1991; Webster 1998). Consequently, external social influence, primarily from buyers, may influence a salesperson's use of technology. Thus, in the same vein as company support, *buyer encouragement to use sales technologies* will also boost salesperson perception of the usefulness of such technologies.

The model also considers *sales experience* as an antecedent of technology use. The technology available to the modern selling organization may have created a "generation gap" among salespeople. Younger salespeople often are more "technology literate." Hence, they may find it easier to incorporate new technology tools into their selling processes than do their older counterparts. Further, experience may also be negatively related to perceived usefulness. Salespeople with more experience learned how to get things done effectively prior to help from modern technology, so they may see less usefulness or relative advantage in it now.

Selling Smart

In the model, sales technology usage impacts salesperson performance directly, but also indirectly by helping salespeople to employ "smart selling" behaviors. Research on smart selling dates back to Weitz's (1978) pioneering contributions. The smart-

selling literature says that effective salespeople should tailor their behaviors to specific buyer interactions (Spiro, Perreault, and Reynolds 1977; Spiro and Weitz 1990; Sujan 1986; Weitz 1978; Weitz, Sujan, and Sujan 1986) and plan for those interactions (Gwin and Perreault 1981; Sujan, Weitz, and Kumar 1994; Sujan, Weitz, and Sujan 1990). Thus, we focus here on selling smart as the extent to which salespeople (1) engage in planning to determine the suitability of sales behaviors and activities and (2) adapt their behaviors and activities based upon situational considerations. The model suggests that both of these smart-selling activities are facilitated or enabled by appropriate sales technology usage.

Sales Performance

Like other boundary spanners, salespeople typically have responsibility for tasks both outside and inside their own organizations. Study 1 evaluates how sales technology and selling smart influence three specific aspects of performance: sales relationship effectiveness (which is primarily focused on external performance), administrative efficiency (which is primarily focused on internal performance), and market expertise (which involves both external and internal considerations).

Sales relationship effectiveness is the extent to which the salesperson cultivates a sales relationship that works for both the selling and buying firms. *Market expertise* concerns how a salesperson uses knowledge relevant to the product-market, including information about the selling firm and its competitors. *Administrative efficiency* reflects the salesperson's ability to complete required reports in a timely manner. By evaluating

these aspects of performance individually, we can gain insights about the specific mechanisms through which sales technology usage, selling smart behaviors, and combinations of them affect performance outcomes.

HYPOTHESES

In the following sections, we briefly discuss hypotheses concerning the direct effects of technology usage on sales performance. We then examine hypothesized indirect effects on performance through selling smart. Finally, we discuss hypotheses regarding the antecedents to technology usage.

Direct Effects of Sales Technology Usage on Sales Performance

Salespeople may apply sales technologies to improve their performance in ways not captured by the two selling smart constructs. Thus, beyond its indirect effects through selling smart, we expect that sales technology usage will have a direct effect on sales performance. For example, most modern salespeople focus on building effective relationships with buying firms and are likely to use technology to improve their sales relationship effectiveness. For instance, technology can help salespeople both to access information from previous sales interactions and to communicate that information in subsequent interactions.

Further, a number of sales technologies can help salespeople to improve their knowledge of their product-markets, and of the offerings of their own and competing firms. For example, database and spreadsheet software can provide help in accessing and analyzing general market data and trends. Sales technology can also help

salespeople to be more efficient in completing non-selling administrative tasks. For example, time and territory management software can improve a salesperson's ability to coordinate administrative chores and to complete required reports on time. Administrative efficiency represents another aspect of sales performance. For example, Gwin and Perreault (1981) argue that the more efficient salespeople are in performing non-selling activities, the more time they will have for selling activities.

Thus, we expect that sales technology usage will positively affect all three performance outcomes:

H1: Sales technology usage will increase sales relationship effectiveness.

H2: Sales technology usage will increase market expertise.

H3: Sales technology usage will increase administrative efficiency.

Indirect Effects on Adaptive Selling and Planning

Information technology can improve the tailoring of sales reports and market analyses to specific accounts and their likely issues or concerns. Thus, during the sales interaction, sales technology can improve the salesperson's ability to tailor or adapt presentations for each specific customer. It also reduces the amount of effort required to access and present relevant information in response to buyer objections. Further, technology usage can improve the salesperson's practice of adaptive selling behaviors prior to the sales interaction. For example, in the consumer packaged goods industry, shelf-space management software, such as Apollo or Spaceman, allows the salesperson to create plans that meet each retailer's unique needs. Thus, by reducing the amount of

effort otherwise required to meet varying buyer needs, and by using information to more precisely meet those needs:

H4: Sales technology usage will increase the practice of adaptive selling behaviors.

Sujan, Weitz, and Kumar (1994) point out that adaptive selling behaviors and planning for the sales interaction should improve salespeople's performance. These effects may vary, however, depending upon the aspect of performance considered. By tailoring an interaction to a specific buyer, a salesperson will be more effective in addressing specific problems and concerns and will develop a stronger sales relationship. Similarly, adapting sales interactions for specific buyers should improve market expertise. It requires that salespeople listen to the "voice of the customer" and really understand the buying firm's perspectives, which in turn should increase their knowledge and understanding of the market. In contrast, tailoring sales interactions may detract from administrative efficiency. Customizing during and across sales interactions is more administratively cumbersome than standardizing, involving additional administrative tasks and decreasing administrative efficiency.

Thus, we hypothesize that practicing adaptive selling will have the following effects on sales performance:

H6: Practicing adaptive selling behaviors will increase sales relationship effectiveness.

H7: Practicing adaptive selling behaviors will increase market expertise.

H8: Practicing adaptive selling behaviors will decrease administrative efficiency.

Thus, in all, we expect mixed indirect effects of sales technology usage on performance via the practice of adaptive selling behaviors.

Technology facilitates or enables a wide variety of presale planning activities. For example, sales technology can improve a salesperson's planning for a sales interaction by making tasks like managing promotion funds or forecasting sales easier or more practical. During a sales interaction, information technology can also improve the salesperson's ability to access relevant information quickly and respond to buyer questions and objections. Therefore:

H5: Sales technology usage will increase planning for the sales interaction.

By planning for specific sales interactions, salespeople can deliver more persuasive arguments, which should result in improved sales relationships. In addition, planning for sales interactions requires that salespeople conduct more analysis of market conditions and trends, which should improve salespeople's knowledge and understanding of the market. Finally, planning for sales interactions should improve their ability to incorporate administrative responsibilities into their work habits, resulting in more timely execution of administrative tasks. Therefore, we hypothesize that planning for specific sales interactions will affect sales performance as follows:

H9: Planning for specific sales interactions will increase sales relationship effectiveness.

H10: Planning for specific sales interactions will increase market expertise.

H11: Planning for a specific sales interaction will increase administrative efficiency.

Thus, in all, by facilitating or enabling planning for specific sales interactions, sales technology usage should indirectly increase sales performance.

Antecedents of Sales Technology Usage

Encouragement from both the selling and buying organizations should motivate salespeople to use information technology. By providing support, the salesperson's firm offers the rep a better opportunity to try the innovation without risking personal resources. Beyond making technology use easier, support by the company signals management's belief that such technologies are important and useful. Hence, salespeople are more likely to perceive benefit in using the technologies. Similarly, the extent to which salespeople see buyers encouraging them to use information technology will enhance their views of the usefulness of the technology. And, finally, in accordance with our previous discussion, we expect an inverse relationship between sales technology usage and sales experience or age.

Therefore, we hypothesize the following antecedent effects:

H12: Sales experience will decrease sales technology usage.

H13: Company support of sales technology will increase sales technology usage.

H14: The buyer's encouragement to use sales technology will increase sales technology usage.

RESEARCH METHODS

Sample

We developed a preliminary questionnaire and then discussed it during in-depth, pre-test interviews with sales executives representing four different industries—consumer packaged goods, pharmaceuticals, apparel, and computers. After refining the questionnaire, we pre-tested it for clarity and completeness with the help of sales managers within the host firm, a well-known consumer packaged goods firm. Appendix 1A contains the host company's pre-notification and cover letter, the survey instruction letter, and a copy of the questionnaire with the host company's name omitted to preserve their anonymity.

We approached the host firm with a request that we be allowed to survey the firm's U.S. sales force. Management agreed, subject to various stipulations, including (1) confidentiality concerning the firm's participation and (2) a descriptive report to management concerning some of the technology training approaches used in the firm. To improve response rates, we had the firm's top sales executive send each salesperson a pre-notification letter that encouraged participation as well as a cover letter with the questionnaire packet. The cover sheet of the questionnaire guaranteed each salesperson confidentiality. To further signal anonymity of responses, we sent questionnaires to the

sales rep's home-office addresses and asked them to return completed questionnaires directly to the research team's university address (in a postage-paid return mailer). Of 85 questionnaires distributed, 79 (93%) were returned. We dropped six respondents from the analysis because of missing data on one or more measures. The respondents were predominantly male (81%). Almost all of them (96%) had attended college and 74% had completed college degrees.

Measures

Appendix 1 shows the scale items and reliabilities for Study 1. The sales technology usage measure is new. It is based on eight Likert-type items on a 7-point scale anchored by "strongly disagree" (1) and "strongly agree" (7). Scales measuring company support for sales technology and buyer encouragement were also developed for Study 1. Both measures are 7-point Likert-type scales anchored by 1 = "strongly disagree" to 7 = "strongly agree." Sales experience is measured by a question that asked the respondent's total number of years in sales jobs.

The sales performance measures are based on a subset of self-report performance items developed and validated by Behrman and Perreault (1982). Each respondent was asked to rate each item on "how well you have performed relative to an average salesperson in similar selling situations" with a 7-point scale anchored by "needs improvement" (1) and "outstanding" (7).

The planning for the sale measure is the 12-item scale developed by Sujan, Weitz, and Kumar (1994). Similarly, the practicing adaptive selling measure is a shorter

version (4 items) of the scale developed by Spiro and Weitz (1990). As with the performance measure, we reduced the number of scale items from the original 16 to four based on a request from the firm's management to reduce some of the "duplication" in the questions. The criteria used to select the remaining four items were (1) consistency with the original conceptualization and (2) analysis of reported item-to-total correlations. Both selling smart constructs use 7-point Likert-type items scale anchored by 1 = "strongly disagree" and 7 = "strongly agree."

In addition, so that we would be able to explicitly link the constructs of the model to personal selling practice and use of specific sales technologies, we asked each salesperson to indicate the extent of his or her reliance on each of a number of different hardware and software technologies (using a rating scale anchored by 1= "not at all" and 7= "very heavily").

Data Analysis

We use statistical methods that optimize Study 1's potential benefit to a larger number of Information Systems (IS) managers who may have smaller groups of users to support their sampling efforts. We analyzed the scale data using ordinary least-squares path analysis (Pedhazur and Schmelkin 1991). Maximum likelihood approaches, like LISREL, have advantages in some causal modeling situations. However, they require a larger sample size than is available here (or in many business-market sales organizations). In addition, we computed product-moment correlations between each

construct in the model and the reliance ratings for each of a number of specific sales technologies.

RESULTS

We estimated a series of six regression models, one for each of Study 1's six endogenous variables (listed in the left column of Table 2.1). The model on adaptive selling is not statistically significant and, thus, the expected relationship between technology usage and adaptive selling is not supported. However, the other five regression models produced F-statistics that were statistically significant with p-values less than .01—each explaining from 10 to 26 percent of the variance in the dependent variable. Thus, we look at these results in more detail.

TABLE 2.1

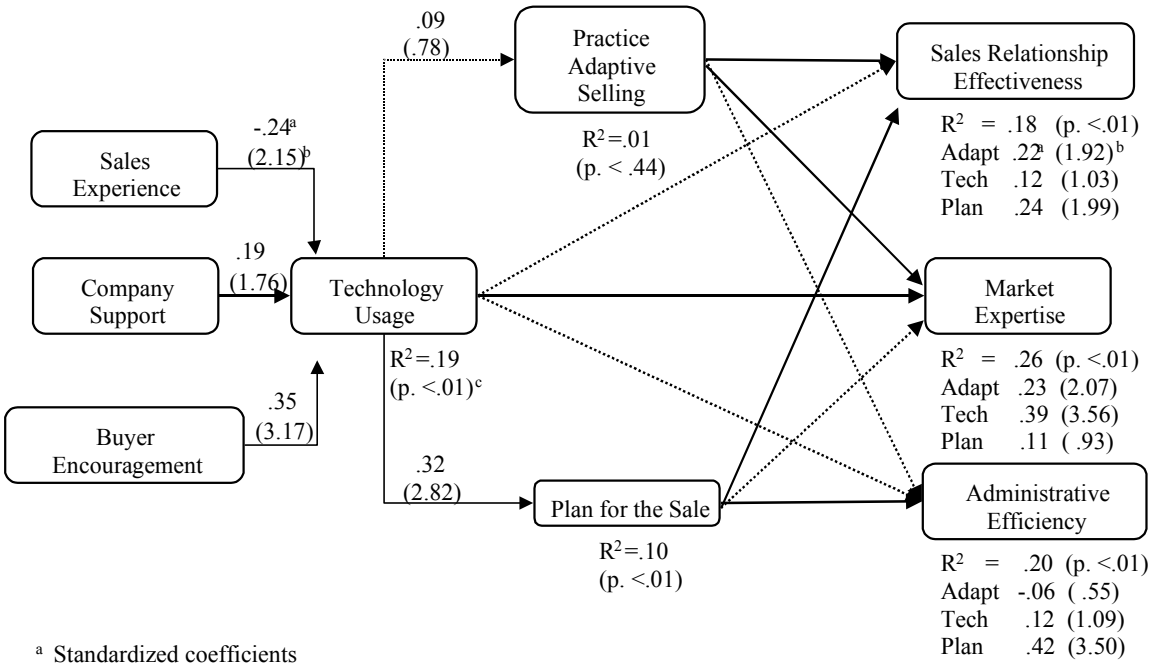
Coefficient Estimates for Paths in Figure 2.1

Dependent Variable	Independent Variables	Overall Model			Path Coefficients		
		R^2	*F*	Prob.	Std. Beta	t value	Prob.
Sales Technology Usage		.19	5.56	<.01			
	Experience				-.24	2.15	.018
	Company Support				.19	1.76	.042
	Buyer Encouragement				.35	3.17	<.01
Plan for the Sale		.10	7.93	<.01			
	Technology Usage				.32	2.82	<.01
Adaptive Selling		.01	0.60	.440			
	Technology Usage				.09	.78	.220
Sales Relationship Effectiveness		.18	5.03	<.01			
	Adaptive Selling				.22	1.92	.029
	Technology Usage				.12	1.03	.154
	Plan for the Sale				.24	1.99	.025
Market Expertise		.26	8.44	<.01			
	Adaptive Selling				.23	2.07	.021
	Technology Usage				.39	3.56	<.01
	Plan for the Sale				.11	.93	.178
Administrative Efficiency		.20	6.01	<.01			
	Adaptive Selling				-.06	.55	.293
	Technology Usage				.12	1.09	.140
	Plan for the Sale				.42	3.50	<.01

Selling Smart with Technology Model

Figure 2.2 summarizes the path analysis results. In the path diagram, standardized regression (path) coefficients represent the strength and direction of empirical relationships, and the probability level for the resulting statistic is shown in parentheses. Thus, hypothesized relationships that are statistically significant are shown in solid lines; paths that are not statistically significant appear as dotted lines.

FIGURE 2.2
Study 1: Summary of Results



[a] Standardized coefficients
[b] T-statistics: paths denoted by solid lines are significant at p. < .05 level.

Technology usage. The regression of sales technology usage on the antecedent constructs—sales experience, company support for sales technology, and buyer encouragement to use sales technology—produced an R^2 of .19 (F=5.56, *p.*< .01). The path coefficient for each of the explanatory variables was statistically significant (*p.*<.05), and the signs for the coefficients were consistent with hypotheses 12, 13, and 14. Note that the path coefficient for buyer encouragement was almost double the coefficient for company support of sales technology. This may suggest that salesperson use of technology is more influenced by an effort to respond to buyer's needs than by an employer's investments or encouragement.

Selling smart. As noted above, the regression of adaptive selling on sales technology usage is not statistically significant (F = .60, *p.*< .44). Thus, contrary to H4, sales technology usage did not increase the practice of adaptive selling behaviors in this sales force. In contrast, sales technology usage does explain 10 percent of the variance in planning for the sale (F = 7.93, *p.*< .01). The path coefficient is statistically significant (t = 2.82, *p.*< .01) and in the direction hypothesized in H5. It could be argued that this sales technology usage effect is spurious and that it is actually due to a direct effect of experience on planning (and its common variance with sales experience). Such a direct effect is not specified in the model in Figure 2.1. However, that competing explanation of the technology usage effect is not substantiated when tested with a regression model that includes both sales experience and technology usage as predictors. To the contrary, there is no significant effect due to sales experience (*p.*<.67), and after controlling for the covariation of sales experience with planning and technology usage,

the statistically significant technology effect is still observed (*p*.<.01). Thus, there is an unequivocal effect of technology usage on planning.

Sales relationship effectiveness. The regression of sales relationship effectiveness on adaptive selling, planning for the sale, and sales technology usage explained 18 percent of the variance in the dependent variable, which is statistically significant (F = 5.03, *p*.< .01). The individual path coefficients for adaptive selling and planning were each in the hypothesized direction and statistically significant at the .05 level. However, the coefficient for sales technology usage was not statistically significant (*p* .< .16) at conventional probability levels. This result may be attributable, in part, to a reduction in statistical power caused by a relatively small sample. However, both the adaptive selling and planning for sales constructs had path coefficients (β =.22 and .24, respectively) almost twice the magnitude of the sales technology usage coefficient (β =.12). Thus, the results support H6 and H9 but not H1. Taken as a whole, the results support the hypothesized indirect effects of technology usage on sales relationship effectiveness through planning for the sales interaction (paths H5 and H9). However, they do not support its direct effect (H1) or its indirect effect though adaptive selling (paths H4 and H6). And, of course, the results are generally consistent with the focus of past research on smart selling.

Market expertise. In combination, practicing adaptive selling, sales technology usage, and planning for the sale accounted for 26 percent of the variance in market expertise (F = 8.44, *p*.< .01). Sales technology usage had by far the largest effect, with a path coefficient of .39 (*p*.< .01). Adaptive selling behaviors also had a statistically

significant effect on market expertise, with a path coefficient of .23 ($p.< .05$). Planning for the sale did not have a statistically significant effect ($p.< .18$). However, given the size of the path coefficient (.11), the probability level is impacted by the sample size. Thus, regarding market expertise, the results support H2 and H7 but not H10. In total, then, the data support the hypothesized direct effect of sales technology usage on market expertise (H2), but they do not support either of the hypothesized indirect paths—through adaptive selling (H4 and H7) or through planning for the sale (H5 and H10).

Administrative efficiency. Practicing adaptive selling, sales technology usage, and planning for the sale accounted for 20 percent of the variance in administrative efficiency ($F = 6.01$, $p. < .01$). Planning for the sale accounted for the majority of the explanatory power and was associated with the only statistically significant path coefficient ($\beta = .42$, $p.< .01$). Nonetheless, the signs of the path coefficients for both adaptive selling and sales technology usage were in the hypothesized directions. These results support H11 but not H3 and H8. Thus, in all, the results support the hypothesized indirect effect of technology usage on administrative efficiency through planning for the sales interaction (paths H5 and H11) but not its direct effect (H3) or its indirect effect though adaptive selling (paths H4 and H8).

Total effects of technology usage on sales performance. In path analysis, the total effects of independent variables on a dependent variable can be calculated by summing the indirect and direct effects (Bollen 1989). Because its direct effect was not statistically significant, the indirect path through planning for the sale accounts for the total effect of sales technology usage on sales relationship effectiveness. To calculate

that effect, we multiplied the two standardized path coefficients (β =.32 for H5 and β =.24 for H9) for a product of .08. Thus, for one standard deviation of change in sales technology usage, on average, we would expect a .08 change in the value for sales relationship effectiveness. The total effect of sales technology usage on market expertise is its direct effect of .39. Finally, the total effect of sales technology usage on administrative efficiency is represented by the indirect path effect through planning for the sale (β =.32 for H5 and β =.42 for H11) which has a product of .13. Thus, consistent with the results shown in Table 2.1, the total (direct and indirect) effect of technology usage on market expertise (.39) is greater than on administrative efficiency (.13) or sales relationship effectiveness (.08).

Correlation among Study Constructs and Reliance on Specific Technology Tools

To provide a richer view of salespeople's reliance on specific sales technologies, Table 2.2 shows the mean and standard deviation of the respondents' ratings for their reliance on each of a variety of specific software and hardware technologies. The table also gives bivariate correlations between each of the specific technology tools and each of the constructs measured in Study 1.

The results suggest some interesting implications:

- The sales technology usage measure shows significant correlations with salespeople's reliance on the majority of the software and hardware technologies. This pattern provides evidence of construct validity.

- The table shows a broad pattern of negative correlations between sales experience and specific sales technologies. Consistent with our previous support of H12, more experienced salespeople do not rely as heavily on many software and hardware technologies as do their counterparts who have been in a sales position for a shorter period of time.
- Table 2.2 results also lend general support to hypotheses H13 and H14, with a pattern of positive correlations between reliance on the individual technologies and both buyer encouragement to use sales technology and company sales technology support. A notable exception is that buyer encouragement does not translate into a higher reliance on order-entry software ($r = -.27$, $p < .05$). One explanation for this finding might be that more technologically sophisticated buyers use electronic data interchange (EDI) order systems—interorganizational computer-to-computer exchange systems of standard business documents (*cf.*, Massetti and Znud 1996; Mukhopadhyay, Kekre, and Kalathur 1995)—to enable continuous inventory replenishment, making order entry software unnecessary (for a typology of interorganizational systems see Kumar and van Dissel).

TABLE 2.2

Correlations Among Constructs and Salesperson's Reliance on Individual Technologies [a]

	Average reliance rating	Standard deviation of rating	Experience in sales	Buyer encouragement to use sales technology	Company sales technology support	Sales technology usage	Practicing adaptive selling behaviors	Planning for the sale	Sales relationship	Market expertise	Administrative efficiency
SOFTWARE TECHNOLOGIES											
E-mail	6.6	0.8	-.14	.22	-.14	.45	.11	.04	.11	.14	.13
Word processing	6.0	1.6	-.06	.10	-.06	.34	.05	.16	.09	.15	.07
Order status	5.5	2.1	-.11	-.08	.18	.01	.13	.21	.17	.07	.24
Promotion funds	5.2	2.2	.14	.19	.12	.20	.11	.28	.28	.22	.31
Spreadsheet	5.0	1.9	-.27	.33	-.08	.55	-.05	.07	.16	.32	.10
Graphics	4.9	1.6	-.23	.38	.15	.43	.10	.15	.06	.36	.07
Order entry	4.6	2.5	-.21	-.27	.22	.03	-.01	.02	.06	.02	.12
Sales forecasting	4.2	2.1	-.18	.12	.32	.03	.19	.21	.10	.11	.09
Database management	4.1	1.9	-.31	.15	.19	.24	-.05	.29	.23	.18	.23
Contact management	3.7	2.0	-.35	.09	.32	.23	.12	.16	.21	.16	.09
Time management	3.6	2.1	-.28	.06	.28	.04	.04	.16	.16	.11	.22
Shelf space management	3.5	2.3	-.08	.12	-.05	.12	.25	.12	.36	.32	.04
HARDWARE TECHNOLOGIES											
Laptop	6.9	0.5	-.08	.30	-.03	.42	.06	-.05	.08	-.01	.04
Computerized presentations	4.9	1.8	-.14	.34	.20	.23	.05	.11	-.06	-.07	.11
Facsimile machine	4.7	1.6	-.18	.36	.18	.34	.03	.17	.17	.18	.13
Color printer	4.6	2.7	-.15	.23	.02	.22	-.12	-.13	-.09	.10	-.13
B&W printer	4.5	2.8	-.15	-.16	-.01	-.23	.07	-.05	.07	-.15	-.02
Tele-conferencing	3.6	1.6	.24	.33	.12	.09	.11	.06	.05	.12	-.12
Mobile phone	2.6	1.9	-.29	.15	.03	.12	.14	.07	-.02	.03	-.07
Projected presentations	2.6	1.6	.03	.34	.17	.34	.13	-.11	-.06	.15	-.03
Personal digital assistant	1.2	0.6	-.30	-.11	.10	-.17	-.22	-.15	.03	-.01	-.15
TV video conferencing	1.1	0.4	-.03	.01	.06	.02	-.21	-.10	-.08	.03	.11

- Interestingly, the selling smart constructs show some significant correlations with reliance on specific technologies. These correlations may suggest which technologies facilitate or enable selling smart activities in this firm.
- The three sales performance constructs correlate significantly with different specific software technologies. Sales relationship building correlates significantly with reliance on promotion funds, database management, and shelf-space management software; whereas market expertise correlates with reliance on promotion funds, spreadsheet, graphics, and shelf-space management software; and administrative efficiency correlates with reliance on order-status, promotion funds, database management, and time management software. Some of these correlations mimic relationships among individual sales technologies and selling smart constructs. However, the overall direct effects of technology usage on performance aspects may be explained, in part, by these relationships.
- Interestingly, particularly in light of the number of studies conducted on information technology spending and productivity, none of the performance measures correlates significantly with reliance on any of the *individual* hardware technologies. Of course, that supports our contention that researchers should look beyond specific technology tools and examine the mechanisms or tasks through which specific technologies affect productivity or performance.

STUDY 1: DISCUSSION AND CONCLUSIONS

Study 1's findings support our model and the idea that sales technology usage improves sales performance, both directly and indirectly, by enhancing selling smart. Sales technology usage directly affects market expertise. Moreover, sales technology usage explains 10 percent of the variance in planning for the sales interaction, which in turn has positive effects on the two aspects of performance that sales technology usage did not affect directly. Thus, technology usage indirectly affects both external and internal aspects of performance—sales relationship effectiveness and administrative efficiency.

Study 1 did not, however, find a significant relationship in this sales organization between sales technology usage and the practice of adaptive selling. However, it is important to keep in mind that the relationship between sales technology usage and adaptive selling hypothesized in the model is a normative one. Adaptive selling makes sense and is, almost by definition, good selling as well as smart selling. Similarly, when a firm invests in sales technology that could enable or facilitate adaptive selling it should be used that way. Thus, in this case the diagnostic value of this sort of model is that there is an opportunity for the company to achieve greater return on its investments by focusing more attention on uses of technology for adaptive selling. Based on the results in Table 2.2, it appears that the most immediate opportunities are to benchmark—within the organization—the most effective uses of software for promotion funds management, spreadsheet analysis, database access, and especially shelf-space management. These are the items that are already correlated with sales relationship effectiveness. Beyond

that, however, it would make sense for management in the company to look at other types of technology that are not currently correlated with adaptive selling. For example, Table 2.2 shows that use of electronic presentations is not related to adaptive selling. Yet, if used properly, electronic presentations are a very effective tool for adapting to a particular customer's questions or concerns because they make it easy to spontaneously draw on and intermix materials from a comprehensive (multimedia) archive.

In addition to its contributions, Study 1 also has limitations. Aspects of Study 1 could be strengthened through improved measures. For example, the adaptive selling and planning for the sales interactions scales have lower reliabilities in Study 1 that in other research in which they have been used. However, these basic constructs have previously been evaluated in the literature. Further, the lower alpha for the adaptive selling scale here reflects the trade-off of using a smaller number of items rather than the full set. On the other hand, the items selected are ones with high item/total-scale statistics and do reflect the breadth of the conceptual domain. Here, picking items that are more homogeneous would have artificially inflated estimates of reliability at the cost of lower validity. If the correlations among items for these measures were higher there would be less error variance. Higher error variance probably has the effect of attenuating the strength of the estimated relationships. Even so, the portions of this work that replicate earlier work on smart selling lead to the same basic conclusions.

These findings beg consideration of other tasks through which sales technology usage may affect performance. Given the current widespread interest in relationship marketing, future research should address the role of sales technology within a sales

relationship-building context. Furthermore, a better understanding of some of the new tasks enabled by technology within a relational context would enrich our understanding of the technology-to-performance relationship. The following chapter helps transition this research from a traditional selling process to a relational context by proposing new theory relevant to the modern inter-organizational relationship-building process.

Chapter 3

BOUNDARY-BLURRING THEORY

Chapter Abstract

This chapter proposes a new theory on inter-organizational relationships which we call boundary-blurring theory (BBT). The theory is called boundary-blurring theory because it rejects the traditional assumption that organizational boundaries are rigid and are represented by people. Instead BBT proposes that boundaries can be represented by activities and offers new explanations of the conditions and mechanisms through which mutually beneficial activities blur organizational boundaries. We refer to the individuals who perform such boundary-blurring activities as boundary-blurring people. The theory proposes mechanisms and conditions that help forge inter-organizational relationships so that the organizations tend to work together as one coordinated unit on activities that are jointly important. Thus, BBT accounts for the widespread changes in business relationships in such arenas as cross functional new product development teams, supply-chain management, cooperative promotion, international marketing, and joint producer-seller category management programs. In this chapter, we review the relevant literature, outline the logic of BBT, explain how it compares with other widely used inter-

organizational theories like Boundary Role Theory, and discuss its implications for both academic research, business practice, and this dissertation.

INTRODUCTION

Today, a major objective of personal selling in business markets is to forge relationships between selling firms and buying firms. Thus, an important research question involving the sales technology-to-performance relationship is, how does sales technology usage affect sales performance in a relational context?

A central theme in marketing is that an organization should orient its activities toward satisfying the wants and needs of its external constituents. Yet, no theory in marketing proposes the mechanisms through which organizational members forge relationships with external constituents. This chapter proposes a new theory of inter-organizational relationships derived with marketing's relational themes at its nucleus, and modern market conditions as its underlying assumptions. The discussion here is limited to components most relevant to the context of this dissertation—that is, transitioning our understanding of how technology affects performance from a traditional selling process to a more modern relational context.

For over three and a half decades now, marketing researchers investigated inter-organizational relationships by adapting and revising, often appropriately consistent with the market conditions of their respective times, the assumptions of Boundary Role Theory (BRT) as well as other theories including Transaction Cost Analysis (TCA), Dependency Theory, and Agency Theory. While these theories contribute important

insights when their assumptions fit the conditions of inter-organizational relationships, the conditions underlying today's business-to-business relationships have changed so radically that they often void the underlying assumptions of these frameworks. Nonetheless, most published academic research builds on, either implicitly or explicitly, the underlying assumptions of those theories—which in today's environment are often obsolete. That may beg the question as to why the theoretical assumptions became outdated. One explanation is that when those theories were introduced, like the theory proposed here, they too reflected the conditions of their times to better understand ongoing interorganizational behavior.

A few decades ago, interorganizational relationships in business—particularly buyer-seller exchanges—were best characterized by competition for resources between firms. So, the focus of most academic research and business practice was on dyadic relationships in which each party sought to maximize its own self-interests and outcomes in an arm's length exchange process.

Today, in stark contrast, firms often dedicate teams of representatives to specific accounts to develop closer relationships by finding shared solutions to common problems. Such is the case in the modern embrace of the supply-chain concept. In a variety of industries, integrated vertical systems of firms designed to deliver better value to the end channel consumer have evolved. To compete in such industries, today's firm can either reduce its dependency on other firms by isolating itself and continuing its efforts in a horizontal competition manner—in which each channel member competes with other channel members at the same level of production or distribution—or, it can

collaborate with other firms by sharing activities to achieve jointly important interests. So, modern conditions differ dramatically from the 1970's and 1980's when firms focused more on vertical integration or horizontal competition to reduce threats posed by dependence. Consequently, to better understand ongoing marketing activities and theory, both marketing managers and academicians need a better theoretical framework based upon these newly evolved conditions.

Thus, the purpose of this chapter is to propose a theory of inter-organizational relationships which is consistent with today's conditions, often characterized by cooperative interactions, a long-term optimization-focus, and the integrative outcomes managed through the activities of networks of individuals. We refer to that theory as Boundary-Blurring Theory (BBT).

First, this chapter reviews relevant portions of one of the most widely-used interorganizational theories in marketing—boundary role theory. Second, we discuss some differences in the context of modern business from when that theory was introduced. Third, we propose a new way of defining organizational boundaries and outline the conditions that promote the conduct of boundary-blurring activities and the process through which boundaries become blurred. Fourth, we discuss the new theory's implications for managers and scholars. Fifth, we focus on the specific elements of the new theory that are relevant to this dissertation—specifically how its proposed tasks relate to technology usage in a business market relational selling context.

Boundary Role Theory

Role theory was first espoused in the works of Kahn and associates in 1964 (Kahn, Wolfe, Quinn, and Snoek 1964). Role theory considers people from the perspective of their environment—consisting largely of formal organizations and groups. Any person's life is seen as an array of roles determined by the set of organizations and groups to which the person belongs. By affecting the physical and emotional state of the person, characteristics of the organizations and groups are major determinants of an individual's behavior. An organization, such as a selling or a buying firm, is seen as a dynamic system characterized by a continuing process of input, transformation, and output. Inputs include people, materials, and energy while goods and services represent an organization's outputs.

Each member of an organization has a set of potential behaviors (*activities*) associated with their position (an "office" in role theory terminology) which constitutes their role. Merton (1957) described the person's *role set* as the network of adjacent members in the person's work-flow process and/or his hierarchy of authority. The defining activities of a role consists of *expectations* "sent" or communicated to the person by members of the role set. These communications represent attempts by members of the role set to influence the behavior of the focal person thereby creating *role pressures*. While role pressures represent the communications that were sent to the focal person, *role forces* represent that person's interpretation of those expectations. When two or more sets of role forces conflict with one another, the focal person experiences *role conflict*. When the information required for a person to meet the

expectations of his role set are inadequate, the person experiences *role ambiguity*. Thus, from Kahn and associates' (1964) original conceptualization, role theory has proved to be an extraordinarily robust framework that can be applied to a vast array of organizational roles. In this dissertation, we are more specifically interested in subsequent applications to individuals who serve in roles that link organizations together.

The pioneering work of Organ (1971) and Adams (1976)—referred to as Boundary Role Theory(BRT)—advanced the application of role theory to inter-organizational contexts . According to BRT, organizations require boundaries that are not readily permeable and must depend on external constituencies for both inputs and the consumption of their outputs (Kahn et. al. 1964; Katz and Kahn 1966). People who represent the organization's boundaries to external constituents are called boundary role people (Organ 1970; Adams 1976). Boundary role people (BRP) establish linkages between organizations to reduce the threat of uncertainty posed by dependence (Organ 1971). Given these advances in boundary role theory, its readily apparent application to the buyer-seller dyad and across functional boundaries, and the conditions underlying relationships between buyers and sellers over the past few decades, boundary role theory has been widely used in the marketing and sales literature (*c.f.,* Dubinsty and Mattson 1979; Behrman and Perreault 1984; Behrman, Bigoness, and Perreault 1981; Fisher and Gitelson 1983; Fry, Futrell, Parasuraman, and Chmielewski 1986; Goolsby 1992; Keller and Holland 1975; Lysonski 1985; Rhoads, Singh, and Goodell 1994; Singh, 1993; Singh 1998).

Changes in Business Practices Since BRT was Introduced

Much as Adams (1976) described the conditions underlying organizational norms for bargaining, inter-organizational relationships can be characterized along three continua: from cooperative to competitive interactions, from distributive to integrative outcomes, and from short-term maximizing to long term optimizing temporal objectives. Twenty years ago, most assessments of market conditions were more accurately characterized by competitive interactions, short-term maximization-focused, and "zero-sum" distributions of outcomes. But, much of what goes on in business relationships today bears little resemblance to what existed then. Inter-organizational complexities result from changes that include globalization of the business economy, industry-wide consolidation of once competing firms, vertical channel integration, and unprecedented technological innovation. So, today's inter-organizational relationships, particularly in business-to-business settings (but also across functions within a business) are better characterized by cooperative interactions, a long-term optimization-focus, and a "sum-sum" integration of outcomes. Indeed, we live in changing times.

Boundary-Blurring Theory

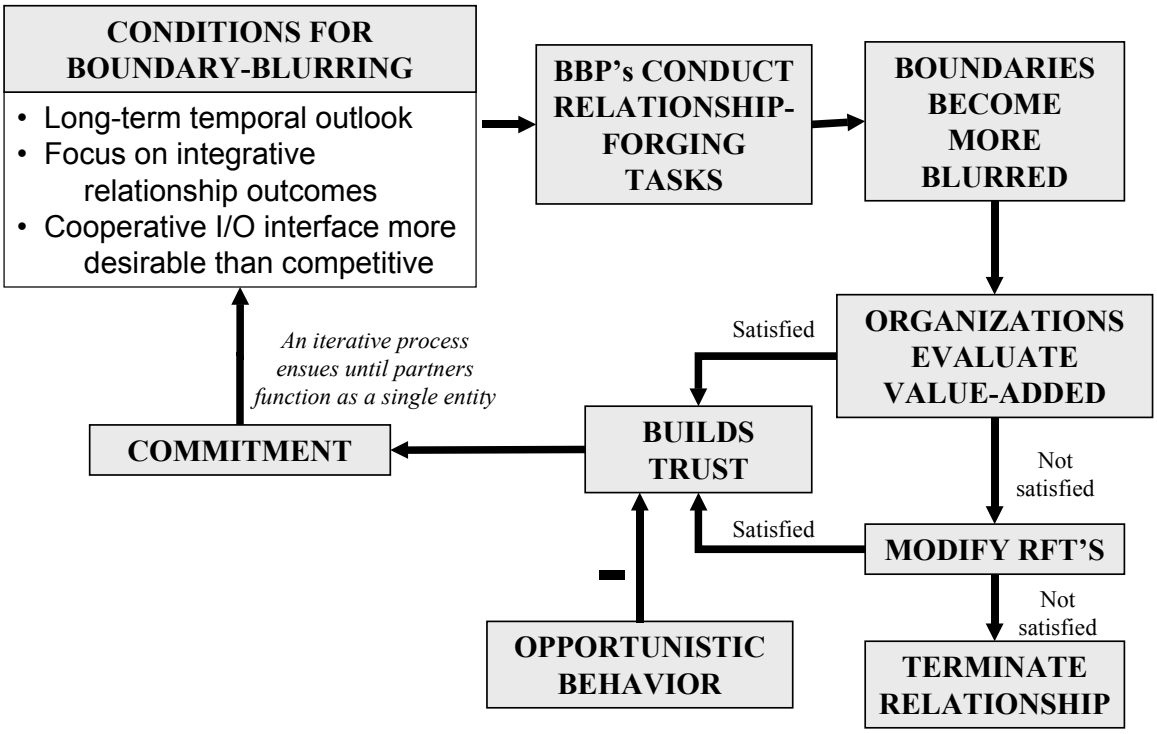
Simply stated, boundary-blurring theory (BBT) posits that it is not people that form the boundaries of an organization, but rather the activities of individuals within an organization that form its boundaries. So, boundaries between or among organizations may not be fixed—depending on how activities are shared. Thus, boundaries can be blurred through the conduct of mutually beneficial activities and/or by sharing responsibilities for activities of joint importance. Some individuals play a more critical

role in these collaborative activities. These boundary-blurring people (BBP), implicitly or explicitly, have responsibility for doing tasks that forge relationships. With buyer-seller firm relationships, salespeople, buyers, and others can assume BBP roles. Over time, successfully blurred boundaries result in organizations that work together—at least on some jointly important activities—as one coordinated unit.

We refer to the set of tasks that improve collaboration, cooperation, and shared effort between or among organizations as relationship-forging tasks (RFT's). Thus, the theory helps account for widespread changes in business relationships. It applies across multiple arenas—ranging, for instance, from cross-functional new-product development teams to joint producer-seller category management programs to international marketing.

Figure 3.1 depicts some of the key conditions and processes associated with BBT. Boundary-blurring theory proposes that organizational *boundaries* can be represented by *activities* instead of as people and that activities can be *mutually beneficial* to or *shared across* multiple organizations. These activities tend to *blur* the boundaries between organizations. Thus, *boundary-blurring people* (BBP) *can do tasks that forge relationships* in such a manner that the organizations tend to *work together*—that is, as one coordinated unit to achieve jointly important activities.

FIGURE 3.1
Boundary-Blurring Conditions and Process



Conditions

Certain conditions between organizations favor a boundary-blurring process over a traditional arms-length exchange. However, the key link for a continued blurring process is the organization's assessment of the value added from the relationship. The organization's assessment requires some comparison between the desired outcomes from the relationship to baseline outcomes that could be achieved in the absence of that relationship.

Thus, the critical element for building long-term satisfying relationships is the continued maintenance of acceptable levels of customer-perceived value. Zeithaml (1988) defines customer-perceived value as "the consumer's overall assessment of utility of a product based on a perception of what is received and what is given." While the definition has primarily been used as a consumer-based conceptualization, it applies equally well in a business market setting. In a vertical market system of organizations, the ultimate evaluation of outcomes is based upon the efficient and/or effective delivery of value to the channel's end consumer.

Thus, an organization evaluates value by comparing "what is received" from the relationship to "what is given" to the relationship. An example,. in the context of BBT, would be to value the "what" as relationship-forging tasks. Those "received" refers to outcomes from tasks conducted by members of the external organization, while tasks "given" refers to outcomes from those performed by members internal to the organization. So, beyond the conditions, an essential precursor to the initiation of boundary-blurring activities by an organization, is the belief that such activities will add value towards achieving the outcomes desired by the organization—value defined in terms of the efficiency and/or effectiveness of the vertical market system.

Long-term temporal outlook.

In the short-term, the conduct of activities by members internal to an organization requires an investment from the organization. For example, a manufacturer pays its engineers for time at work. Assume the engineers conduct activities toward designing a product to specifications requested by a customer firm. The product should

produce beneficial returns to both the manufacturer and the customer firm. However, those returns are not realized immediately as they occur over time. Thus, assuming the firm is practicing profit-maximizing behavior, a long-term temporal outlook is a necessary condition to the conduct of relationship-forging tasks.

Focus on integrative relationship outcomes.

Consider the modern exchange between buying and selling organizations. It is rare that all of the needs of the buyer are perfectly aligned with the interests of the seller. At the extreme, in the classic "zero sum" game, all of the gains by the seller come at the expense of the buyer and vice versa. Boundary-blurring people from both firms should look beyond individual transactions *to the accumulation of future outcomes for both firms* since the external organization will assess the value added from the conduct of relationship-forging tasks post hoc. Both firms share a common interest in satisfying the buyer's customer, and with adequate information about priorities, it is often possible to identify win-win strategies. To develop and share such information, today's BBP should capitalize on the benefits afforded through innovations in information technology—which simplify identification of integrative alternatives as well as the projected returns from executing such alternatives.

Cooperative inter-organizational interface is more desirable than a competitive interface.

To initiate a boundary-blurring relationship, it is a necessary condition that organizations focus on cooperation between themselves in lieu of competition. Competitive intentions may, however, be a motivating factor in the formation of the

boundary-blurring relationship. That is, in a global economy, to be an effective competitor, one may need to be an effective cooperator (Morgan & Hunt 1994). Here, we argue that effective cooperation can be defined by the conduct of relationship-forging tasks and that by sharing tasks throughout the channel organizations can deliver more efficient and effective outcomes to the end-consumer. Within a given industry, the evolution of such vertical market systems will pressure other horizontally aligned organizations to consider cooperation to maintain their competitive positions.

Consider the consumer packaged-goods industry for illustrative purposes. Shifts in power across horizontal competitors—from supermarkets to mass merchandisers—prompted the need for manufacturers to deliver better value to the supermarket consumer—or else, face power shifts within the channel from manufacturers to retailers (*cf.,* Messinger and Narasimhan 1995). Consequently, consumer packaged goods manufacturers began collaborating with supermarkets to coordinate shared activities across organizations that improved channel efficiency (i.e., analysis of scanner data collected by the supermarkets). Early efforts to coordinate activities between some manufacturers and some supermarkets produced more efficient vertical market systems that were soon duplicated in other manufacturer/supermarket combinations.

In the case of the market analysis of scanner data example, ironically, this condition for the boundary-blurring process may have resulted from increases in information intensity (Glazer 1991). That is, information generated from the advent of the UPC scanner enabled the channel efficiency gains afforded through the conduct of market analysis by boundary-blurring salespeople from the manufacturing firm.

Boundary-Blurring Process

Given the aforementioned conditions, boundary-blurring organizations (BBO's) establish roles for their members that include the conduct of relationship-forging tasks—activities designed to forge boundaries between organizations. The conduct of such tasks blurs the boundaries between the organizations. Over time, BBO's evaluate the value-added from their relationships. If the value-added is satisfactory, then trust fosters between organizations. If the value-added is not satisfactory, then either a satisfactory modification to the relationship-forging tasks conducted by the BBO's evolves or the relationship is terminated. Trust, in the absence of opportunistic behavior, builds commitment—which, given continued conditions that favor the boundary-blurring process—leads to an iterative sequence of events that continues until either the BBO's function as a single entity or the relationship is terminated.

As a simple example, from the marketing managers viewpoint, long-term desired outcomes include customer satisfaction and support (Anderson 1982). If a relationship fails to add value towards that objective, the firm would either modify the relationship-forging tasks to satisfaction and continue until the firms functioned as a single entity or they would terminate the relationship.

Contrasting Implications Between Boundary Role and Boundary-Blurring Theories

Perhaps our best way of proposing BBT is to outline specific updates to the assumptions of the widely-used boundary role theory. Table 3.1 summarizes the

contrasting implications between the two theories, and for the most part, is self-explanatory. However, some points in the table need a brief introduction.

First, instead of thinking of organizations as having boundaries that are not readily permeable by outside forces (Adams 1976), BBT proposes that organizations should establish mechanisms that increase the permeability of its boundaries with partnering firms. As in BRT, boundary role people (BRP) play a critical role in establishing those mechanisms.

Second, as opposed to having a concern for the threat of uncertainty posed by dependence (Organ 1971), BBT proposes that firms should seek efficiencies through interdependence with partnering firms (Cannon and Perreault, forthcoming). For example, suppliers should identify distributors who can deliver their products to the end consumer at lower costs—thereby increasing customer value. Economies of scale and scope exist for the distribution of a large number of supplier-distributor combinations.

TABLE 3.1
Contrasting Implications Between Boundary Role and Boundary-Blurring Theory

BOUNDARY ROLE THEORY	**BOUNDARY-BLURRING THEORY**
Make boundaries that are not readily permeable (Adams 1976)	Create mechanisms to blur boundaries (e.g. Relationship Forging tasks)
Organizations have different goals and priorities (Katz et. al. 1964)	Seek common goals and priorities between organizations (*cf.*, Anderson and Narrus 1990)
Monitor and control Boundary Role People (Adams 1976) stimulated by competitive organizational interests	Foster cooperative relationships through trust and commitment (*cf.*, Morgan and Hunt 1994, Doney and Cannon 1997)
Concern for threat of uncertainty posed by dependence (Organ 1971)	Gain efficiency and effectiveness through interdependence
Focus on distributive outcomes (Katz et. al. 1964)	Focus on integrative outcomes (*cf.*, Clopton 1984)
BRPs serve as dyadic individual "opponents" (Organ 1971)	Reduce individual influence by empowering networks of BBPs representing organizational interests (*cf.*, Achrol 1997; Moon 1994)

Third, instead of focusing on distributive inter-organizational outcomes (Katz and Kahn 1966), BBT proposes that firms consider integrative inter-organizational outcomes (Clopton 1984). The modern salesperson's analysis must shift from the old "zero sum" distributive paradigm to the new win-win integrative paradigm of relationship marketing.

Fourth, instead of focusing on different goals and priorities between firms (Katz et. al. 1964), BBT proposes a focus on common goals and priorities.

Fifth, as opposed to dyadic individual "opponents" (Organ 1971), BBT proposes that networks of people should be used to represent organizational boundaries (Moon 1994).

Sixth, as opposed to the nature of the relationship being characterized by concerns for monitoring and control, BBT proposes relationships characterized by trust and empowerment (Doney and Cannon 1997).

Relationship-Forging Tasks and Technology Usage

Sheth and Parvatiyar (1994) define relationship marketing as "the practice of building long-term satisfying relations with key parties—customers, suppliers, distributors—in order to retain their long-term preference and business." McKenna (1991) states that in the new relationship marketing era, marketing's job is to "integrate the customer into the design of the product and to design a systematic process for interaction that will create substance in the relationship." That statement is in stark contrast to the boundary role theory perspective that organizations should create linkages primarily to reduce the threat of uncertainty posed by dependence (Organ 1971).

Concerning the role of technology in relationship building, McKenna says:

> Technology permits information flows in both directions between the customer and the company. It creates the feedback loop that integrates the customer into the company, allows the company to own a market,

> permits customization, creates a dialogue, and turns a product into a service and a service into a product.

Thus, by using technology, boundary-blurring people can accomplish a variety of relationship-forging tasks. More specifically, when considering salespeople as boundary-blurring people, note that McKenna describes modern salespeople not as product peddlers, but as knowledgeable marketing consultants. In fact, McKenna goes on to say that salespeople who use technology extensively have become the "Great Differentiators" for their products and companies. We argue that this success is due, in part, to the salesperson's application of technology to facilitate or enable relationship-forging tasks.

But, people other than salespeople can perform relationship-forging tasks. For example, finance managers can perform tasks that benefit both their internal and some external organization. This is true of almost any member of any organization. Furthermore, technology may not facilitate or enable some relationship-forging tasks. For example, the conduct of social activities between members across organizations may represent relationship-forging tasks that help forge relationships between or among organizations.

Figure 3.2 summarizes the relationship between salespeople, technology, relationship-forging tasks, and this dissertation's research focus. As shown, this dissertation focuses on a portion of the relationship between technology usage and relationship-forging tasks. Several other areas remain open for future empirical research that applies boundary-blurring theory in other contextual domains.

FIGURE 3.2
Relationship Among Salespeople, Technology, Relationship-Forging Tasks. and Dissertation's Focus

	Salespeople	Others
RFT's Facilitated or Enabled By Technology	**Dissertation Focus**	**Future BBT Research**
Other Relationship-Forging Tasks	**Future BBT Research**	**Future BBT Research**

Implication of Boundary-Blurring Theory for this Dissertation

Boundary-blurring theory is relevant to the modern salesperson's role in a relational context to forge boundaries of buying and selling firms together. The theory is relevant to this dissertation's development with regard to our proposition that the dominant indirect effects of technology usage on relationship effectiveness occur through these relationship-forging tasks. However, to establish the linkage between relationship-forging tasks and sales performance, we need to develop a new perspective on the salesperson's role.

Salespeople forge relationships between selling and buying firms by conducting relationship-forging tasks that influence the two firm's overall assessment of the value afforded through the relationship. Today's sales environment is far more data intensive than yesterday's. Technology usage facilitates or enables accessing, analyzing, and

communicating both qualitative and quantitative data. As always, one could view the salesperson as a service provider. What's new in this environment is that the service is not only provided to the selling firm, but it is also provided to the buying firm. The service provided to the selling firm continues to be executing the sales function. However, that function, we argue, has changed. Instead of just trying to optimize the selling firm's outcomes at the buying firm's expense according to a distributive paradigm, the new function is optimizing the joint outcomes for both firms according to an integrative paradigm (Clopton 1984). Thus, the service provided to the buying firm is akin to a marketing research function.

Therefore, on a hypothetical continuum, the modern salesperson uses technology to provide a service that is more like marketing research than was the case with traditional selling. This perspective is consistent with earlier projections that advances in information technology would prompt the firm's marketing research function to decentralize (*cf.,* Perreault 1992). While persuasive selling skills may always be critical to a variety of sales activities, the shift to a heavier dependence on data-analytic skills is central to understanding the evolving sales role.

To summarize, when one considers the sales technology-to-performance relationship from the perspective of the modern sales role in a relational context, a key relationship-building objective of the salesperson, as a BBP, is to "blur" the boundaries between the selling and the buying organizations. A blurred boundary between two organizations—and a less rigid distinction between the needs of one firm and the needs of the other—can occur when the goals and priorities of the two organizations are

compatible. Thus, BBT helps bridge the gap between yesteryear's arm's length dyadic exchange process and today's technology-driven relationship marketing environment. Essentially, that gap represents the evolution in the theoretical underpinnings between Study 1 to Study 2 in this dissertation.

Chapter 4

STUDY 2: SALES TECHNOLOGY, RELATIONSHIP-FORGING TASKS, AND SALES PERFORMANCE IN BUSINESS MARKETS

Chapter Abstract

Relationship-building skills are as paramount to a successful selling function today as persuasive selling skills were just a decade ago. At that time, the focus of most academic research and business practice was on salesperson-buyer dyads in which each party sought to optimize his or her firm's outcomes in an arm's length exchange process. In stark contrast, today, manufacturers often dedicate salespeople to specific customer accounts to develop closer relationships by finding shared solutions to common problems. Consequently, perspectives of both marketing managers and academicians concerning the role of the salesforce are changing. This change is leading to new views of the sales job and sales performance. In this chapter, we advance three key types of technology usage—accessing, analyzing, and communicating information—and propose that technology's major effect on relationship building occurs indirectly through sales planning and a set of relationship-forging tasks.

We argue that relationship-forging tasks are key mechanisms by which salespeople blur the boundaries between selling and buying organizations to build more

effective relationships. Boundary-blurring theory provides the theoretical foundation for both the existence of relationship-forging tasks as well as the logic for their effects on relationship effectiveness. Furthermore, we propose that technology has both indirect effects (through sales planning) and direct effects on the salesperson's administrative efficiency.

This chapter discusses the logic of the relationships hypothesized in the model and reports the results of a path-analysis test of the proposed relationships based on data collected from sales representatives of a consumer packaged-goods firm. The findings support the model, which is basically an application of boundary-blurring theory in a sales context.

INTRODUCTION

In this chapter, we introduce and evaluate a model that incorporates the ideas of Boundary-blurring theory (BBT) with learning from the selling smart-with technology model. The proposed model considers the technology usage and sales performance relationship from a relational perspective. It proposes, measures, and evaluates the effects of three types of uses of technology—for accessing, analyzing, and communicating information—on salesperson efficiency and effectiveness (through a set of relationship-forging tasks).

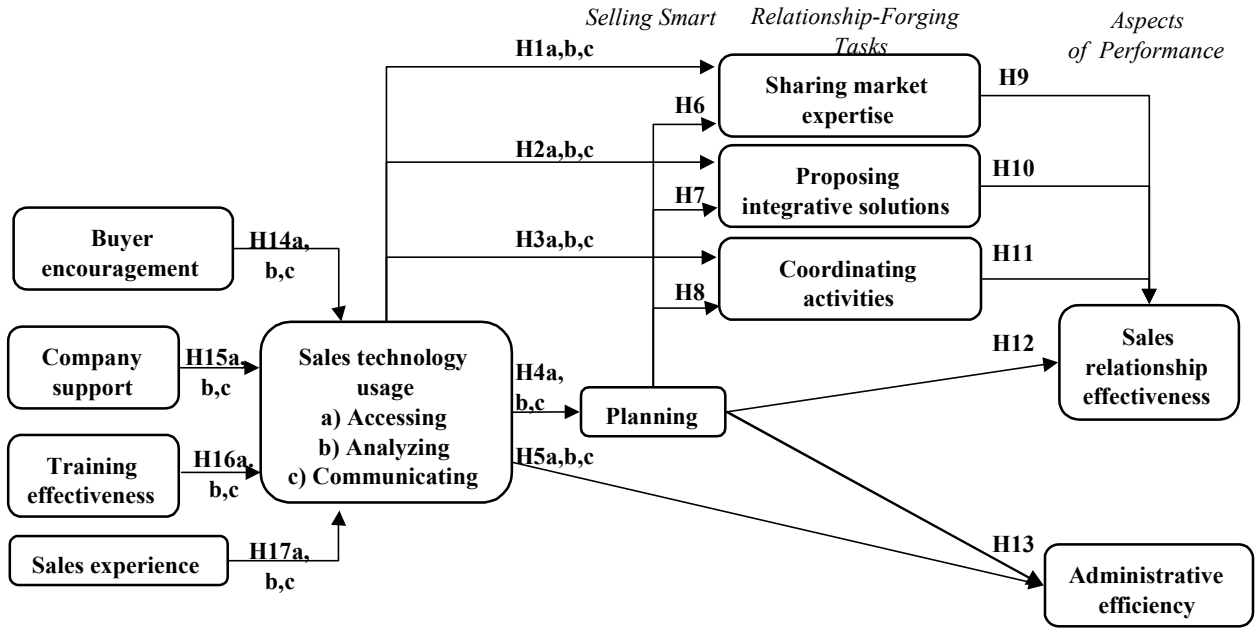
Relationship-forging tasks represent key mechanisms through which salespeople help to blur the boundaries between selling and buying organizations. Thus, boundary-blurring theory provides the theoretical foundation for both the existence of relationship-forging tasks as well as the logic for their effects on relationship effectiveness. As

discussed in more detail earlier, relationship-forging tasks refer to activities conducted by salespeople as boundary-blurring people to forge or merge their organizational boundaries with an external organization's boundaries. In the sales context, the external organization is typically a buyer firm. Thus, this chapter will refer to the internal and external organizations as the selling and buying firm, respectively.

THE CONCEPTUAL MODEL

Figure 4.1 overviews a conceptual model of some key antecedents and consequences of sales technology usage. To provide an enriched understanding of the sales technology usage-to-performance relationship, the model considers three key types

FIGURE 4.1
Effectiveness and Efficiency with Technology Model



of sales technology usage—accessing, analyzing, and communicating information. The model specifies four constructs—buyer encouragement, company support, training effectiveness, and experience—as antecedents of those aspects of sales technology usage. The different types of technology usage, in turn, affect both external and internal aspects of salesperson performance. Those effects are viewed as both direct and indirect through their impact on the salesperson's "selling smart" activities—represented in the model by sales planning—and relationship-forging tasks—represented in the model by sharing market expertise, proposing integrative solutions, and coordinating activities. The following sections discuss the model in more detail.

Types of Sales Technology Uses

Sales technology is the application of information-related hardware and software that is intended to facilitate or enable the performance of sales tasks. Sales technology usage is the extent to which salespeople blend information technology into their sales jobs. Here, we focus on three key types of sales technology usage: accessing, analyzing, and communicating information.

Using technology *for accessing information* refers to the extent to which salespeople use technology to retrieve information relevant to the performance of their sales jobs. Likewise, *using technology to analyze information* refers to the extent to which salespeople use technology to better understand the implications of information relevant to the performance of their sales jobs. Finally, *using technology to communicate information* refers to the extent to which salespeople use technology to

transfer information both to individuals within and outside their sales organization in the performance of their sales jobs. Thus, by expanding our model to include these three types of technology uses, we should gain a better understanding of the mechanisms through which the proposed antecedents affect technology usage.

Antecedents of the Types of Sales Technology Uses

Chapter 2 discussed some factors that may impact the use of sales technology (*cf.,* Rogers 1962, Fishbein and Ajzen 1975, Davis 1989). For parsimony, our model considers four key factors that are relevant across most sales situations: three that replicate our findings in Study 1—company support, buyer encouragement, and sales experience—and one additional antecedent—training effectiveness—which was suggested by our findings in Study 1.

The importance of company support and its effect on technology usage was addressed earlier by building upon previous research (*cf*., Cerveny and Sanders 1986; Igbaria 1994; Lucas 1978, Boynton, Zmud, and Jacobs 1994, Igbaria and Zinatlli 1998; Igbaria, Guimaraes, and Davis 1995). To briefly reiterate, c*ompany support of sales technology*—the extent to which a firm provides support that meets salespeople's perceived need for information technology—should affect ease of use. The type of support might take a variety of forms. At the lower end of the spectrum a company could provide its salespeople with access to some technology and say, "here you go." At the other end, support could include development of custom systems, extensive training, and changes in the systems of evaluation and compensation. More effective support should

both be recognized by sales reps and make the technology easier to use. Moreover, to the extent that support signals the importance that management places on such technology, it may also affect salesperson perceptions of usefulness.

Past research on extra-organizational factors focused primarily on external support and training (*c.f.,* Igbaria et. al. 1997). To reiterate our logic, salespeople, in their boundary spanning roles, have higher interaction with external constituents, their customers, than do other non-boundary spanning personnel. Social influence theory (Fulk et. al. 1990) posits that social influences can positively or negatively influence one's attitudes, choices, and use of information technologies. Past empirical research supports the theory (e.g., Fulk 1993; Fulk and Boyd 1991; Webster 1998). Consequently, external social influence, primarily from buyers, may influence a salesperson's use of technology. Thus, in the same vein as company support, *buyer encouragement to use sales technologies* will also boost salesperson perceptions of the usefulness of such technologies.

Training effectiveness refers to the extent to which salespeople consider their sales technology training to have been effective. That training could refer to either internal or external training programs depending upon the source of one's sales technology training. Larger organizations often have their own sales technology training departments while smaller ones outsource training services. Of course, effective training can occur through either means. Thus our logic for the influence of training effectiveness on sales technology usage is that—regardless of whether the salesperson's training is internal or external to the organization—it will affect their level of use.

Again, the model considers *sales experience* as an antecedent of the three types of technology use. The technology available to the modern selling organization may have created a "generation gap" among salespeople. Younger salespeople often are more "technology literate." Hence, they may find it easier to incorporate new technology tools into their selling processes than do their older counterparts. Further, experience may also be negatively related to perceived usefulness. Salespeople with more experience learned how to get things done effectively prior to help from modern technology, so they may see less usefulness or relative advantage in it now.

Relationship-Forging Tasks

We conceptualize and develop three aspects of relationship-forging tasks: sharing market expertise, proposing integrative solutions, and coordinating activities. *Sharing market expertise* refers to the extent to which salespeople develop and share their knowledge of the product market both with their associates and with their customers. *Proposing integrative solutions* refers to the extent to which salespeople propose recommendations that are mutually beneficial to the selling firm, the buying firm, and the buying firm's customers. *Coordinating activities* refers to the extent to which salespeople coordinate the activities of members of the selling firm with those of members from the buying firm. We develop and evaluate measures of each relationship-forging task and then evaluate their effects on a key performance outcome: relationship effectiveness.

Sharing Market Expertise.

In Study 1, we defined m*arket expertise* as the salesperson's knowledge concerning critical facets of the product-market including product offerings from the selling firm and its competitors as well as the buying firm and the buyer firm's competitors. An example is "knowing the benefits and features of competitors' products." In Study 1, we adopted a traditional conceptualization of market expertise as a performance outcome. Here, we consider the role of market expertise in the process of forging relationships—measured and conceptualized as a variable precedent to a desired outcome. Specifically, we propose that a salesperson must go beyond *having* market expertise (an outcome) to *sharing* that expertise (a process) with others to help achieve desired relationship-building outcomes between the selling and buying organizations. As a contrast to the traditional conceptualization of market expertise as an outcome variable, an item from the sharing market expertise construct proposed in here is "I keep my buyers aware of market changes." The boundary-blurring salesperson will not only share expertise with his/her customer, but also with others in the buying and selling firms to facilitate their relationship-building role.

Proposing Integrative Solutions.

Clopton (1984) addressed the vital importance of focusing upon integrative instead of distributive outcomes in a relational context. Here, we argue that the boundary-blurring salesperson who *proposes integrative solutions* is conducting an activity that forges the relationships between the buying and selling firms. An example of proposing integrative solutions is "I come up with ideas that are winners for my firm, the buyer, and final consumers."

Coordinating Activities.

Coordinating activities represent the role of the salesperson in linking the activities between members across the buying and selling firms. We propose that this activity helps forge boundaries between the organizations by advancing the mutual interest of the involved parties. An example of a coordinating activity is "I coordinate activities between my firm's employees and my account(s)."

Planning

To reiterate from Study 1, the smart-selling literature says that effective salespeople should tailor their behaviors to specific buyer interactions (Spiro, Perreault, and Reynolds 1977; Spiro and Weitz 1990; Sujan 1986; Weitz 1978; Weitz, Sujan, and Sujan 1986) and plan for those interactions (Gwin and Perreault 1981; Sujan, Weitz, and Kumar 1994; Sujan, Weitz, and Sujan 1990). Thus, in Study 1, we defined selling smart as the extent to which salespeople (1) engage in planning to determine the suitability of sales behaviors and activities and (2) adapt their behaviors and activities based upon situational considerations. In that same study, we tested these hypotheses and found support for technology's effect on planning, but not on adaptive selling behaviors. Thus, in this model, to achieve a more parsimonious model, we focus on the technology relationship to planning. Here, we replicate our argument that planning activities are facilitated or enabled by appropriate sales technology usage.

Sales Performance

Salespeople typically have responsibility for tasks both outside and inside their own organizations. Study 2 evaluates how the different types of sales technology usage and planning influence two specific aspects of performance: sales relationship effectiveness (which is primarily focused on external performance) and administrative efficiency (which is primarily focused on internal performance).

Sales relationship effectiveness is the extent to which the salesperson cultivates a sales relationship that works for both the selling and buying firms. *Administrative efficiency* reflects the salesperson's ability to complete required reports in a timely manner. By evaluating these aspects of performance individually, we can gain insights about the specific mechanisms through which types of sales technology usage, relationship-forging tasks, selling smart behaviors, and combinations of them affect both external and internal performance outcomes.

HYPOTHESES

In this section, we briefly discuss hypotheses concerning the direct effects of the types of technology usage on administrative efficiency. We then examine hypothesized indirect effects of technology usage on external performance through relationship-forging tasks and planning. Finally, we discuss hypotheses regarding the antecedents to the proposed types of technology usage.

Indirect Effects on External Performance Through Relationship-Forging Tasks

A number of sales technologies can help salespeople to improve their knowledge of their product-markets, and of the offerings of their own and competing firms. For example, in Study 1, we found significant bivariate correlations between a salesperson's reliance on database and spreadsheet software and market expertise. This suggests that both assessing and analyzing information contribute to an increased level of market expertise, which is prerequisite to sharing it. Of course, using sales technology to communicate information should directly facilitate the sharing process. Thus, we propose the following hypotheses concerning the relationship between key types of technology usage and sharing market expertise:

> **H1a:** Using technology to access information will increase sharing market expertise.
>
> **H1b:** Using technology to analyze information will increase sharing market expertise.
>
> **H1c:** Using technology to communicate information will increase sharing market expertise.

Typically, it is more difficult to identify truly integrative solutions than it is to identify a distributive solution that only benefits the selling firm. However, sales technologies can help salespeople sort through data relevant to the costs and benefits of various recommendations from several different viewpoints including that of the selling

firm, the buying firm, and the final consumer. For example, a salesperson could use data retrieval software that provides a user-friendly interface between the salesperson and a large database to access information about product markets. In turn, the salesperson could analyze that data using spreadsheets or statistical analysis software to better understand the probabilities that a given proposal would yield desirable integrative outcomes. Finally, a computerized-presentation that links graphic displays of probable outcomes from proposed integrative solution could facilitate the communication exchange between the salesperson and his buyers. Drawing on this logic, we hypothesize:

> **H2a:** Using technology to access information will increase proposing integrative solutions.
>
> **H2b:** Using technology to analyze information will increase proposing integrative solutions.
>
> **H2c:** Using technology to communicate information will increase proposing integrative solutions.

Technologies can help coordinate activities between buying and selling organizations. To use the exchange of products as an example, product delivery, at times, lags consumer demand and modification to the delivery schedule becomes necessary. For example, a salesperson could use technology to access information concerning the status or location of several deliveries between the selling firm's manufacturing plants and the buyer's distribution centers. Given that information and changes in the buyer's need that differ from the original distribution plan, the

salesperson could alter the flow of products using technology to communicate new instructions to distributing organizations to better meet the buyer's changing needs.

Other functional issues arise between the organizations that require the salesperson's attention. Another example involves the monetary exchange between the organizations. Financial managers of a customer firm sometimes elect to pay less than the amount invoiced for a given transaction—based on their understanding of deductions applicable to that transaction. That deduction process generates a fund management discrepancy between the buying and selling organizations. However, software technologies can help salespeople access and analyze information related to such fund management issues. Subsequent to such analysis, a communication technology such as electronic mail, can help the salesperson coordinate activities between the involved finance managers. Using this logic, we hypothesized the following:

H3a: Using technology to access information will increase coordinating activities.

H3b: Using technology to analyze information will increase coordinating activities.

H3c: Using technology to communicate information will increase coordinating activities.

The three proposed relationship-forging tasks should improve the salesperson's relationship effectiveness by blurring the boundaries between the two organizations.

H9: Sharing market expertise will increase sales relationship effectiveness.

H10: Proposing integrative solutions will increase sales relationship effectiveness.

H11: Coordinating activities will increase sales relationship effectiveness.

Thus, in all, by facilitating or enabling the accomplishment of relationship-forging tasks, the three types of sales technology usage should indirectly increase external sales performance.

Indirect Effects on Internal and External Performance Through Planning

Technology facilitates or enables a wide variety of presale planning activities. For example, in Study 1, we found a positive relationship between sales technology usage and sales planning—which was supported by a positive correlation between using software for managing promotion funds or for forecasting sales and planning for the sale. Therefore:

H4a: Using technology to access information will increase sales planning.

H4b: Using technology to analyze information will increase sales planning.

H4c: Using technology to communicate information will increase sales planning.

Sales planning should improve one's practice of sharing market expertise. Planning helps provide adequate time to communicate with others. Thus,

H6: Sales planning will increase sharing market expertise.

Sales planning should improve one's level of proposing integrative solutions. Proposing integrative solutions can be a time-involved process and planning helps provide adequate time to accomplish the tasks. Thus,

H7: Sales planning will increase proposing integrative solutions.

Planning is an essential element of the task of coordinating activities between members of the buying and selling firm. Thus,

H8: Sales planning will increase coordinating activities.

Consistent with our findings in Study 1, by planning for specific sales interactions, salespeople can deliver more persuasive arguments, which should result in improved sales relationships. Planning for sales interactions should improve their ability to incorporate administrative responsibilities into their work habits, resulting in more timely execution of administrative tasks. Therefore, we hypothesize that planning for specific sales interactions will affect sales performance as follows:

H12: Sales planning will increase sales relationship effectiveness beyond its effects on relationship-forging tasks.

H13: Sales planning will increase administrative efficiency.

Thus, in all, by facilitating or enabling planning for specific sales interactions, the types of sales technology usage should indirectly increase internal sales performance.

Direct Effects of Sales Technology Usage on Internal Performance

Salespeople may apply sales technologies to improve their administrative efficiencies in ways not captured by sales planning. Thus, beyond its indirect effects through planning, we expect that sales technology usage will have a direct effect on internal sales performance. For example, technology can help salespeople both to access information from previous sales interactions, analyze that information, and/or communicate their conclusions as recommendations to buyers during subsequent interactions. Indeed, sales technology can help salespeople to be more efficient in completing non-selling administrative tasks. For example, as we found in our earlier study, time and territory management software can improve a salesperson's ability to coordinate administrative chores and to complete required reports on time. Administrative efficiency represents another important aspect of sales performance. For example, Gwin and Perreault (1981) argue that the more efficient salespeople are in performing non-selling activities, the more time they will have for selling activities.

Thus, we expect that all three types of sales technology usage will positively affect administrative efficiency:

H5a: Using technology to access information will increase sales planning.

H5b: Using technology to analyze information will increase sales planning.

H5c: Using technology to communicate information will increase sales planning.

Antecedents of Sales Technology Usage

Encouragement from both the selling and buying organizations should motivate salespeople to use information technology. The extent to which salespeople see buyers encouraging them to use information technology will enhance their views of the usefulness of the technology. Therefore, we hypothesize the following antecedent effects:

H14a: Buyer encouragement will increase using technology to access information.

H14b: Buyer encouragement will increase using technology to analyze information.

H14c: Buyer encouragement will increase using technology to communicate information.

By providing support, the salesperson's firm offers the rep a better opportunity to try the innovation without risking personal resources. Beyond making technology use easier, support by the company signals management's belief that such technologies are important and useful. Hence, salespeople are more likely to perceive benefit in using the technologies.

H15a: Company support will increase using technology to access information.

H15b: Company support will increase using technology to analyze information.

H15c: Company support will increase using technology to communicate information.

In a similar vein, training effectiveness should increase one's skills in using technology to access, analyze, and communicate information.

H16a: Training effectiveness will increase using technology to access information.

H16b: Training effectiveness will increase using technology to analyze information.

H16c: Training effectiveness will increase using technology to communicate information.

Finally, in accordance with our previous discussion, we expect an inverse relationship between sales technology usage and sales experience or age.

H17a: Sales experience will decrease using technology to access information.

H17b: Sales experience will decrease using technology to analyze information.

H17c: Sales experience will decrease using technology to communicate information.

RESEARCH METHODS

Sample

We developed a preliminary questionnaire and evaluated it for clarity and completeness with the help of sales managers within the host firm, a well-known

consumer packaged goods firm. This firm was not the same firm that participated in the earlier study.

We approached the host firm with a request that we be allowed to survey portions of the firm's U.S. sales force. Management agreed, subject to various stipulations, including that we (1) maintain confidentiality concerning the firm's participation and (2) provide them with a descriptive report to management concerning some of the technology training approaches used in the firm.

To improve response rates, in accordance with our request, the organization's top sales executive sent each salesperson a pre-notification letter that encouraged participation as well as a cover letter with the questionnaire packet. The cover sheet of the questionnaire guaranteed each salesperson confidentiality. To further signal anonymity of responses, we sent questionnaires to the sales rep's home-office addresses and asked them to return completed questionnaires directly to the research team's university address (in a postage-paid return mailer).

At the request of the host firm and based upon their experience with previous surveys, in an effort to optimize participation by limiting the amount of time required to respond to such a mailing, we split the questionnaire into two parts: the first contained four pages of items while the second contained two pages. Appendix 2A includes the host firm's pre-notification and cover letter, the survey instruction letter, and the first questionnaire and Appendix 2B includes the host firm's cover letter, the survey

instruction sheet for the second questionnaire, and the second questionnaire. The name of the host company was removed from the appendices to preserve their anonymity.

We mailed the second questionnaire about 10 days after we had mailed the first one. On March 1, we mailed the first of the 2 questionnaires to 196 sales personnel from which we received 151 responses (for a pre-follow up response rate of 77% on the first questionnaire). We mailed the second questionnaire out on March 10 to the same 196 people and received 129 responses (a pre-follow up rate of 66% on the second questionnaire). We had a total of 116 completed questionnaires (responses from individuals to both questionnaires) for an overall pre-follow-up response rate of 59%. To improve upon these response rates, on April 2, we forwarded follow up personalized letters—examples are shown in Appendix 2C—and duplicate questionnaires to the balance of the participants. By the end of April 1999, we received 163 of the first questionnaire (83%), 157 of the second questionnaire (80%), and 154 sets of both (which yielded an overall response rate of 79%) of respondents for whom we had responses on both questionnaires. We dropped 3 respondents from the analysis due to excessive missing data on one or more measures which yields an effective sample size of 151 (77%).

Although this sample included more women than the sample used in Study 1, the respondents were predominantly male (66%). Their average age was 42, but ages ranged from 23 to 63. Respondents annual salaries, not including bonus pay, ranged from $24,000 to $139,000, with all respondents receiving some bonus income (ranging from $400 to $25,000 per year). The average number of hours worked per week was 49

with an average of 17 hours spent doing administrative and/or account coordinating responsibilities, 16 hours directly interacting with customers, and 7 hours doing data analyses. Their average number of years of sales experience was 18—ranging from new hires to an individual with 38 years of sales experience. On average, people in the sample interacted with 34 and 15 people, respectively, outside and inside the selling organization.

Measures

In this section, we elaborate on the measure development process and the psychometric properties of the measures used in Study 2. Appendix 2 shows the final scale items and reliabilities for Study 2. Complete copies of the final questionnaires for Study 1 and Study 2 are located in Appendix 1A and 2A/B, respectively—with the words "new item" appearing in bold for additions to Study 1 measures and the letter "R" indicating reverse scored items.

Table 4.1 shows details for the assessment of scale reliabilities including all original items, item-to-total correlations for each scale, and item reliability estimates from confirmatory factor analyses using structural equation modeling. Conventionally, item-to-total correlations below .40 provide evidence that an individual item may not be internally consistent with the other items comprising a scale. The item reliability is the squared multiple correlation of the standardized measurement parameter and represents the amount of variance in the item that is explained by its proposed latent construct (Bollen 1989).

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SALES RELATIONSHIP EFFECTIVENESS (α = .87)			
RELEFF1	Working with customers to help them improve their profitability.	.60	.41
RELEFF2	Building your customer's business with your products.	.70	.55
RELEFF3	Quickly generating new sales of new company products.	.60	.43
RELEFF4	Listening attentively to identify and understand the real concerns of your customers.	.74	.64
RELEFF5	Contributing to your company's acquiring a good market share.	.62	.47
RELEFF6	Convincing customers that I understand their unique problems and concerns.	.67	.53
RELEFF7	Communicating your own sales presentation clearly and concisely.	.50	.28
RELEFF8	Working out solutions to a customer's questions or objections.	.70	.56
RELEFF9	Working with buyers to develop a partnership that's profitable to both firms.	.47	.24
ADMINISTRATIVE EFFICIENCY (α = .89)			
ADMIN1	Producing accurate and complete records related to orders, expenses, and other routine reports.	.45	.22
ADMIN2	Completing administrative requirements efficiently.	.79	.68
ADMIN3	Submitting required reports on time.	.77	.71
ADMIN4	Operating within the budgets set by the company.	.61	.43
ADMIN5	Addressing my administrative responsibilities in a timely manner.	.82	.75
ADMIN6	Getting required "paperwork" done.	.80	.77

* indicates an item that was not included in the final scale for this construct

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
COMPANY SALES TECHNOLOGY SUPPORT (α = .81)			
COSPT1*	My company adequately equips me with technology tools.	.43	.14
COSPT2*	My company adequately trains me on the use of sales technology.	.55	.33
COSPT3	My company doesn't gives me the support I need to effectively use sales technologies.	.52	.32
COSPT4	This firm needs to give me more help with technology than I get.	.69	.76
COSPT5*	My company supplies all technologies that I need to perform my sales job.	.48	.18
COSPT6	I need more help with technology than I get.	.64	.71
COSPT7	This company doesn't help when I have problems with sales technologies.	.53	.29
BUYER ENCOURAGEMENT TO USE TECHNOLOGY (α = .84)			
BENC1	The buyers I deal with see value in using information technology to improve decisions.	.63	.50
BENC2*	The buyers I deal with are annoyed by technology.	.43	.18
BENC3	The buyers I deal with encourage me to support my proposal with data .	.67	.58
BENC4	The buyers I deal with don't expect me to use technology .	.56	.31
BENC5	The buyers I deal with can't be satisfied unless I rely on information technology.	.53	.40
BENC6	The buyers I deal with are much more interested in personal relationships than data.	.57	.36
BENC7	The buyers I deal with use information technology and expect me to .	.76	.75
TRAINING EFFECTIVENESS (α = .86)			
TREFF1	Sales technology training in this firm is effective.	.64	.49
TREFF2*	When it comes to sales technology, I need better training.	.42	.21
TREFF3	My sales technology training has been "world class."	.69	.59
TREFF4	Training has helped me improve my sales technology skills.	.62	.48
TREFF5	The training I've had on sales technology tools is not adequate.	.66	.49
TREFF6	This firm needs to revamp its sales technology training programs.	.67	.51
TREFF7	I have had effective training on sales technology tools.	.74	.65

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
USING SALES TECHNOLOGY TO ACCESS INFORMATION (α = .90)			
ACCESS1	...best characterized as "infrequent" to "frequent"	.77	.74
ACCESS2*	...best characterized as "not expert" to "expert"	.65	.43
ACCESS3	...best characterized as "not a major emphasis" to " a major emphasis"	.79	.73
ACCESS4	...best characterized as "sporadic" to "routine"	.80	.81
ACCESS5	...best characterized as "hesitant" to "confident"	.73	.51
ACCESS6	...best characterized as "not creative" to "creative"	.67	.47
ACCESS7*	...best characterized as "involuntary" to "voluntary"	.59	.35
USING SALES TECHNOLOGY TO ANALYZE INFORMATION (α = .93)			
ANLYZ1	...best characterized as "infrequent" to "frequent"	.84	.88
ANLYZ2*	...best characterized as "not expert" to "expert"	.75	.48
ANLYZ3	...best characterized as "not a major emphasis" to " a major emphasis"	.82	.87
ANLYZ4	...best characterized as "sporadic" to "routine"	.81	.85
ANLYZ5	...best characterized as "hesitant" to "confident"	.80	.51
ANLYZ6	...best characterized as "not creative" to "creative"	.78	.57
ANLYZ7*	...best characterized as "involuntary" to "voluntary"	.62	.31
USE SALES TECHNOLOGY TO COMMUNICATE INFORMATION (α = .92)			
COMM1	...best characterized as "infrequent" to "frequent"	.84	.86
COMM2*	...best characterized as "not expert" to "expert"	.74	.53
COMM3	...best characterized as "not a major emphasis" to " a major emphasis"	.81	.77
COMM4	...best characterized as "sporadic" to "routine"	.85	.86
COMM5	...best characterized as "hesitant" to "confident"	.77	.57
COMM6	...best characterized as "not creative" to "creative"	.64	.43
COMM7*	...best characterized as "involuntary" to "voluntary"	.62	.34

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SALES TECHNOLOGY USAGE (α = .88)			
STL1	Compared to others in sales, I'm technology oriented.	.67	.52
STL2*	I use more sales technology tools than my job mandates.	.44	.25
STL3*	If my job didn't force me, then I certainly wouldn't use sales technology.	.63	.43
STL4	I avoid using the computer unless I have to.	.53	.31
STL5	I extensively use information technologies to perform my job.	.71	.62
STL6	I rarely use information technologies in my current sales job.	.69	.57
STL7	Sales technology is not one of my key strengths.	.68	.50
STL8	I'm better in many other areas than I am in sales technology.	.68	.55
STL9	I try to link different sales technologies so that they work together well.	.58	.39
STL10	I can't keep up with all the changes in technology.	.39	.17
PROPOSING INTEGRATIVE SOLUTIONS (α = .75)			
INTEG1	I'm good at finding opportunities that benefit both my firm and my customer's.	.59	.58
INTEG2	I try to solve customer problems in ways that also help my firm.	.54	.43
INTEG3*	I often have to push programs that are not in the customer's best interests.	.21	.01
INTEG4	I look for good ways to integrate my customer's goals with my company's need	.56	.42
INTEG5*	I frequently meet our sales objectives in ways that may not help my account(s).	.30	.04
INTEG6	I carefully evaluate the likely benefits and costs to the account of my proposals.	.35	.23
INTEG7*	I'm often unable to reconcile my buyer's concerns with my company's goals.	.35	.06
INTEG8*	I try to develop plans that will be successful for the customer.	.46	.28
INTEG9	I come up with ideas that are winners for my firm, the buyer, and final consumer.	.48	.33
INTEG10*	I decide what to recommend based solely on the benefits to my firm.	.21	.04
INTEG11*	I'm good at using information to help sell sales programs.	.39	.33

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SHARING MARKET EXPERTISE (α = .74)			
MKEXP1	My peers rarely look to me for market expertise.	.39	.18
MKEXP2	Compared to other salespeople, I'm not the most knowledgeable resource on our markets.	.45	.22
MKEXP3	Staying abreast of changes helps me keep my buyers informed.	.52	.37
MKEXP4	I often help my associates with their sales strategies and tactics.	.56	.48
MKEXP5	I keep my buyers aware of market changes.	.56	.49
MKEXP6	Others in my firm look to me for expert advice.	.60	.47
MKEXP7	I'm not very good at sharing knowledge with others on how they should deal with their accounts.	.47	.28
MKEXP8*	Our non-sales associates look to other salespeople for consultation about our customers.	<.01	<.01
MKEXP9*	I frequently inform others about our markets.	.23	.11
COORDINATING ACTIVITIES (α = .74)			
COORD1*	I'm an advocate for my customer when it comes to getting things done within my firm.	.28	.08
COORD2	I get others in my company to do what my buyers want.	.30	.19
COORD3	When necessary, I get others in my firm to work with their counterparts in my buyer's firm.	.53	.35
COORD4*	I rarely deal with others in my firm to get things finished for my customer.	.15	.03
COORD5	I coordinate activities between my firm's employees and my account(s).	.64	.52
COORD6*	Without me as their advocate within my firm, my customers would be at a loss.	.38	.19
COORD7*	There's little need to coordinate activities between my firm and my account(s).	.24	.06
COORD8	I push others in my firm to meet my buyer's needs.	.64	.67
COORD9	I work to ensure that my firm's logistics meet our customer's needs.	.61	.54

TABLE 4.1

Study 2 Pre-Purification Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SALES PLANNING (α = .84)			
PLAN1	I plan my presentation to respond to objections I anticipate from the buyer.	.63	.51
PLAN2	I evaluate the specific information needs of the buyer I will be meeting.	.78	.78
PLAN3	I collect information which will forewarn me of possible problems with the account.	.69	.59
PLAN4	I reconstruct the details of the last call on the account.	.55	.35
PLAN5	I consciously try to anticipate the events which are likely to occur in the call.	.54	.34
PLAN6	I try to determine which of my products will have the most success at that account.	.51	.32
PLAN7	I evaluate whether the time I will spend on a particular product or category is justified relative to my objectives.	.47	.25

There's a strong relationship between Study 1 and Study 2. One aspect of that relationship is that Study 2 uses the findings from Study 1 as a basis for both conceptualization and measurement of constructs. We re-administered all the items comprising Study 1 scale which were included in Study 2. So, when possible, we used the psychometric properties of constructs used in Study 1 to improve our measures of those constructs. However, broadening our conceptualization from a traditional selling-interaction to a relational context called for rethinking how the constructs adopted or adapted in Study 1 should be conceptualized in Study 2. So, in most cases, we added items to Study 1 scales that either built upon the construct as conceptualized in Study 1 or that broadened the construct to fit our conceptualization in Study 2. In this section, we discuss each of the measures used in Study 2 in more detail, elaborate on the scale purification process, and provide psychometric properties for both the complete set of items administered in Study 2 and the final set of items comprising the "purified" measures.

Scale Purification

Our scale purification process included (1) computing internal consistency reliability for each scale (Cronbach 1951), (2) checking item-to-total correlations for each item, (3) deleting an item if it seemed prone to different interpretations, it did not covary as expected with other items, or there was some reason to be suspect of the item, (4) checking item-to-item correlations for significance, (5) using factor analysis to check loadings across constructs, and (6) using confirmatory factor analysis provided through

structural equation modeling to check both item loadings and overall model fit. The following section describes the process in detail.

Table 4.2 shows details for the assessment of scale reliabilities for all items comprising the final scales used in Study 2, item-to-total correlations for each scale, and item reliability estimates from the confirmatory factor analyses conducted using structural equation modeling (SEM) techniques.

While there is much agreement amongst scholars on internal consistency reliability estimates based on Cronbach's (1951) Alpha—conventionally estimates above .70 are acceptable, between .80 and .90 are good, and above .90 are strong—overall model fit evaluation (in this case of confirmatory factor models) is one of the most difficult and highly debated issues in structural modeling (*cf*., Bollen and Long 1993; MacCallum 1990; Mulaik, et al 1989; and Steiger 1990). There are literally dozens of statistics, besides the standard chi-square value. So, before presenting fit statistics for the posited models, we briefly summarize those statistics and why we chose them here.

Several fit statistics use one of two baseline models—the saturated or the independence model—to generate statistics from their comparison with the proposed model. The proposed model is a constrained version of the saturated model saturated—which allows all constructs to covary and thus fits any set of data perfectly. At the opposite extreme, the independence model assumes that all observed variables do not covary with one another. Thus, empirically, interpreting fit statistics for structural modeling involves both selecting a set of statistics and weighing the results across a set

of statistics. Instead of selecting only those statistics that provided the strongest evidence for the goodness of fit of our models, we selected a broad set of widely used, but differently estimated statistics to better capture the range of estimates for the overall fit of the posited models. Those statistics are the χ^2 statistic and its related p-value, the Tucker-Lewis Fit Index, the Root Mean Squared Error of Approximation, the Goodness of Fit Index, and the Adjusted Goodness of Fit Index.

Smaller χ^2 statistics are associated with larger p-values and indicate better model fit since the "null" hypothesis —the sample implied covariance matrix equals the population covariance matrix—is that the model fits the data. That is, unlike interpreting p-values for parameter estimates in regression models, the researcher, typically, does not want to reject the null hypothesis in a posited structural model. The χ^2 statistic is often criticized based on its sample size sensitivity and may yield misleading results that favor excessive parameterized over parsimonious models (Joreskog and Sorbom 1989; Bentler and Bonnett 1980). So, Wheaton et al. (1977) suggests computing a ratio of χ^2/ df and interpreting values that are 5 or less "as beginning to be reasonable." Carmines and McIver (1981) suggests ratios in the range of 2 or 3 indicate an acceptable fit between the hypothetical model and the sample data. Steiger and Lind (1980) also suggest calculating the ratio (χ^2–*df*) over the degrees of freedom multiplied by the sample size and taking square root of the resulting ratio to get a statistic called the "root mean square error of approximation" or RMSEA by Browne and Cudeck (1993). Browne and Cudeck (1993) suggest that a RMSEA of .05 or less indicates a "close fit" although the figure is based on subjective judgement. Conventionally, values between .05 and .07

provide evidence of a “good fit;” .07 to .10 an “acceptable fit”; and greater than .10 “poor fit.”

Tucker and Lewis (1973) suggests model comparisons to the independence model—which is analogous to the testing the null hypothesis in regression models—and many scholars content that the independence model is an appropriate baseline (Sobel and Bohrnstedt 1985). Bollen (1989) refers to the Tucker-Lewis Index (TLI) as ρ^2 and Bentler and Bonett (1980) discussed the index in the context of analysis of moment structures, so it is also known as the Bentler-Bonett non-normed fit index (NNFI). The TLI estimate is typically between zero and one, although it is not limited to that range. Conventionally, TLI values close to 1 indicate a very good fit and above .90 indicate a good fit.

Jöreskog and Sörbom (1984) proposed the goodness of fit index (GFI) which does not consider the degrees of freedom for testing the model. So, they also proposed the adjusted goodness of fit measure (AGFI) which takes into account the degrees of freedom available for testing the model. Both the GFI and the AGFI are widely used in the literature. Both the GFI and the AGFI are bounded by one, which indicates a perfect fit. While the GFI bounded below by zero, the AGFI is not.

TABLE 4.2

Study 2 Purified Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SALES RELATIONSHIP EFFECTIVENESS (α = .87)			
RELEFF1	Working with customers to help them improve their profitability.	.60	.41
RELEFF2	Building your customer's business with your products.	.70	.55
RELEFF3	Quickly generating new sales of new company products.	.60	.43
RELEFF4	Listening attentively to identify and understand the real concerns of your customers.	.74	.64
RELEFF5	Contributing to your company's acquiring a good market share.	.62	.47
RELEFF6	Convincing customers that I understand their unique problems and concerns.	.67	.53
RELEFF7	Communicating your own sales presentation clearly and concisely.	.50	.28
RELEFF8	Working out solutions to a customer's questions or objections.	.70	.56
RELEFF9	Working with buyers to develop a partnership that's profitable to both firms.	.47	.24
ADMINISTRATIVE EFFICIENCY (α = .89)			
ADMIN1	Producing accurate and complete records related to orders, expenses, and other routine reports.	.45	.22
ADMIN2	Completing administrative requirements efficiently.	.79	.68
ADMIN3	Submitting required reports on time.	.77	.71
ADMIN4	Operating within the budgets set by the company.	.61	.43
ADMIN5	Addressing my administrative responsibilities in a timely manner.	.82	.75
ADMIN6	Getting required "paperwork" done.	.80	.77

TABLE 4.2

Study 2 Purified Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
COMPANY SALES TECHNOLOGY SUPPORT (α = .80)			
COSPT3	My company doesn't gives me the support I need to effectively use sales technologies.	.54	.30
COSPT4	This firm needs to give me more help with technology than I get.	.68	.71
COSPT6	I need more help with technology than I get.	.73	.82
COSPT7	This company doesn't help when I have problems with sales technologies.	.50	.27
BUYER ENCOURAGEMENT TO USE TECHNOLOGY (α = .84)			
BENC1	The buyers I deal with see value in using information technology to improve decisions.	.63	.49
BENC3	The buyers I deal with encourage me to support my proposal with data .	.70	.60
BENC4	The buyers I deal with don't expect me to use technology.	.51	.29
BENC5	The buyers I deal with can't be satisfied unless I rely on information technology.	.55	.41
BENC6	The buyers I deal with are much more interested in personal relationships than data.	.54	.35
BENC7	The buyers I deal with use information technology and expect me to .	.77	.75
TRAINING EFFECTIVENESS (α = .86)			
TREFF1	Sales technology training in this firm is effective.	.65	.50
TREFF3	My sales technology training has been "world class."	.72	.62
TREFF4	Training has helped me improve my sales technology skills.	.66	.51
TREFF5	The training I've had on sales technology tools is not adequate.	.62	.46
TREFF6	This firm needs to revamp its sales technology training programs.	.66	.50
TREFF7	I have had effective training on sales technology tools.	.73	.62

TABLE 4.2

Study 2 Purified Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
USING SALES TECHNOLOGY TO ACCESS INFORMATION (α = .90)			
ACCESS1	...best characterized as "infrequent" to "frequent"	.87	.75
ACCESS3	...best characterized as "not a major emphasis" to " a major emphasis"	.86	.73
ACCESS4	...best characterized as "sporadic" to "routine"	.86	.85
ACCESS5	...best characterized as "hesitant" to "confident"	.89	.45
ACCESS6	...best characterized as "not creative" to "creative"	.89	.44
USING SALES TECHNOLOGY TO ANALYZE INFORMATION (α = .93)			
ANLYZ1	...best characterized as "infrequent" to "frequent"	.90	.88
ANLYZ3	...best characterized as "not a major emphasis" to " a major emphasis"	.90	.89
ANLYZ4	...best characterized as "sporadic" to "routine"	.90	.86
ANLYZ5	...best characterized as "hesitant" to "confident"	.93	.46
ANLYZ6	...best characterized as "not creative" to "creative"	.92	.54
USING SALES TECHNOLOGY TO COMMUNICATE INFORMATION (α = .91)			
COMM1	...best characterized as "infrequent" to "frequent"	.87	.89
COMM3	...best characterized as "not a major emphasis" to " a major emphasis"	.88	.77
COMM4	...best characterized as "sporadic" to "routine"	.88	.86
COMM5	...best characterized as "hesitant" to "confident"	.91	.53
COMM6	...best characterized as "not creative" to "creative"	.92	.42
SALES TECHNOLOGY USAGE (α = .86)			
STL1	Compared to others in sales, I'm technology oriented.	.65	.52
STL4	I avoid using the computer unless I have to.	.50	.28
STL5	I extensively use information technologies to perform my job.	.71	.64
STL6	I rarely use information technologies in my current sales job.	.67	.56
STL7	Sales technology is not one of my key strengths.	.67	.50
STL8	I'm better in many other areas than I am in sales technology.	.68	.56
STL9	I try to link different sales technologies so that they work together well.	.57	.38
STL10	I can't keep up with all the changes in technology.	.41	.17

TABLE 4.2

Study 2 Purified Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
PROPOSING INTEGRATIVE SOLUTIONS (α = .75)			
INTEG1	I'm good at finding opportunities that benefit both my firm and my customer's.	.69	.60
INTEG2	I try to solve customer problems in ways that also help my firm.	.71	.44
INTEG4	I look for good ways to integrate my customer's goals with my company's need	.70	.42
INTEG6	I carefully evaluate the likely benefits and costs to the account of my proposals.	.75	.29
INTEG9	I come up with ideas that are winners for my firm, the buyer, and final consumer.	.73	.23
SHARING MARKET EXPERTISE (α = .79)			
MKEXP1	My peers rarely look to me for market expertise.	.39	.18
MKEXP2	Compared to other salespeople, I'm not the most knowledgeable resource on our markets.	.45	.22
MKEXP3	Staying abreast of changes helps me keep my buyers informed.	.52	.37
MKEXP4	I often help my associates with their sales strategies and tactics.	.56	.48
MKEXP5	I keep my buyers aware of market changes.	.56	.49
MKEXP6	Others in my firm look to me for expert advice.	.60	.47
MKEXP7	I'm not very good at sharing knowledge with others on how they should deal with their accounts.	.47	.28
COORDINATING ACTIVITIES (α = .79)			
COORD2	I get others in my company to do what my buyers want.	.41	.22
COORD3	When necessary, I get others in my firm to work with their counterparts in my buyer's firm.	.53	.35
COORD5	I coordinate activities between my firm's employees and my account(s).	.57	.44
COORD8	I push others in my firm to meet my buyer's needs.	.75	.79
COORD9	I work to ensure that my firm's logistics meet our customer's needs.	.60	.49

TABLE 4.2
Study 2 Purified Scale Items, Organized by Construct

Item #	*Item*	*Item-to-total correlation*	*SEM item reliability*
SALES PLANNING (α = .84)			
PLAN1	I plan my presentation to respond to objections I anticipate from the buyer.	.63	.51
PLAN2	I evaluate the specific information needs of the buyer I will be meeting.	.78	.78
PLAN3	I collect information which will forewarn me of possible problems with the account.	.69	.59
PLAN4	I reconstruct the details of the last call on the account.	.55	.35
PLAN5	I consciously try to anticipate the events which are likely to occur in the call.	.54	.34
PLAN6	I try to determine which of my products will have the most success at that account.	.51	.32
PLAN7	I evaluate whether the time I will spend on a particular product or category is justified relative to my objectives.	.47	.25

Sales Relationship Effectiveness. The sales performance measure—*sales relationship effectiveness*—is based on a subset of self-report performance items developed and validated by Behrman and Perreault (1982). Each respondent was asked to rate each item on "how well you have performed relative to an average salesperson in similar selling situations" with a 7-point scale anchored by "needs improvement" (1) and "outstanding" (7).

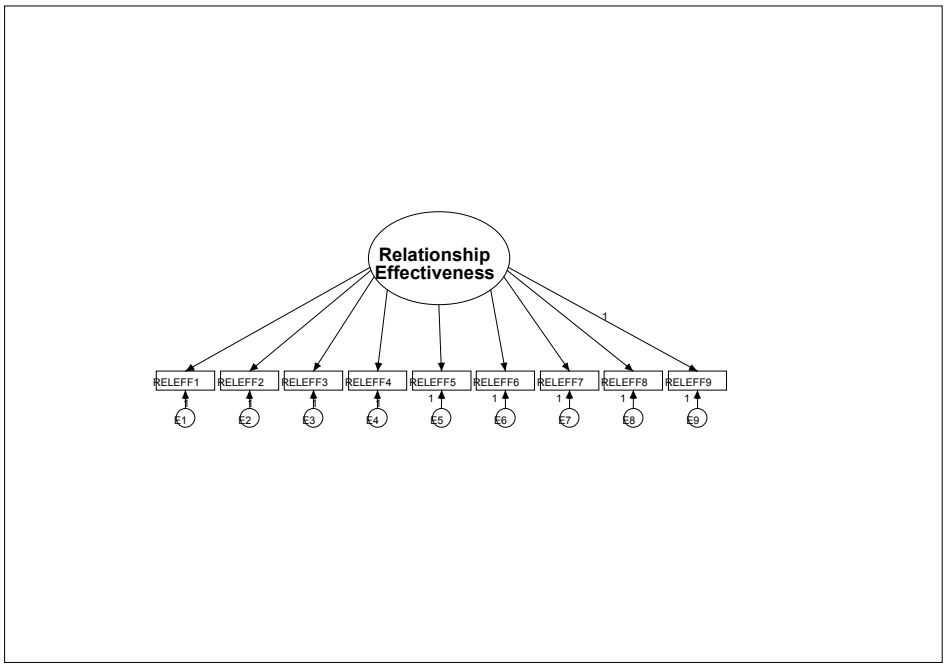
We proposed and tested a 9-item scale for sales relationship effectiveness. We added three items—RELEFF1, 2, and 9—to the 6-items that comprised the scale in Study 1. These three items helped broaden the construct to better represent our conceptualization of sales relationship effectiveness and improved the scale's reliability estimate, in this sample, from an alpha of .85 to an alpha of .87.

To test the dimensionality of the scale, we used confirmatory factory analysis to fit a single factor model to the proposed items. Figure 4.2 shows the diagram of the confirmatory factor analysis for the sales relationship effectiveness scale. The overall fit statistics for the sales relationship effectiveness scale provide evidence of a good fit (χ^2 = 43.9 (*p.* = .02), *df* =27, TLI= .96, RMSEA = .06, GFI = .94, AGFI = .90).

We report fit statistics for the confirmatory factor analysis of the other measures used in Study 2; however, we do not repeat presentation of a figure for all of them since Figure 4.2 provides a visual example.

Administrative Efficiency. The scale for measuring *administrative efficiency* is based on a subset of self-report performance items developed and validated by Behrman

FIGURE 4.2
Confirmatory Factor Analysis of Sales Relationship Scale



and Perreault (1982). Each respondent was asked to rate each item on "how well you have performed relative to an average salesperson in similar selling situations" with a 7-point scale anchored by "needs improvement" (1) and "outstanding" (7).

The scale used in Study 1 for this construct was limited to 3-items—ADMIN1, 5, and 6. This is the minimum number of items conventionally accepted for modeling uni-dimensional factors. So, we developed and included three additional items that are consistent with our earlier conceptualization of this scale. These items improved the scale's sample reliability from .64 for a replicated administration of Study 1's 3-item scale to .88 for the 6-item scale used here in Study 2. The overall fit statistics for a confirmatory factor analysis of the administrative efficiency scale provide evidence of a moderately good fit ($\chi^2 = 29.3$ ($p < .01$), df =27, TLI= .94, RMSEA = .12, GFI = .94, AGFI = .86).

Company Sales Technology Support. We adapted the scale for measuring *company support for sales technology* from Study 1. It consists of 7-point Likert-type items anchored by 1 = "strongly disagree" to 7 = "strongly agree."

Our Study 1 conceptualization of company support included three dimensions—training, equipment, and general help—as an integral part of both the construct and the scale. Thus, Study 1, Study 1 does not training effectiveness separate from other types of support. Specifically, the Study 1 scale included the following item: "My company adequately *trains* me on the use of technology." Of course, in Study 2, that item is more consistent with the specific training effectiveness construct. So, to improve the

discriminant and face validity between the two scales, we dropped that item from this scale.

Furthermore, our Study 1 conceptualization of company support included two items measuring salespeople's perceptions concerning the company's support in equipping them with technologies. Study 2's conceptualization focuses more on salespeople's perception of the general level of help provided to them by the company, so the operationalized measure drops those two items from the scale. Thus, while we administered all the same items used in Study 1 plus three new items, the conceptual model used in Study 2 dictates removal of three items. The Cronbach alpha for the final 4-item scale was .80—which was only a small reduction in the reliability of a scale comprised of all seven items (.81). Confirmatory factor analysis provides evidence of a moderately good fit (χ^2 = 8.67 (p= .01), df =2, TLI= .91, RMSEA = .15, GFI = .97, AGFI = .87).

Buyer Encouragement to Use Sales Technology. The scale measuring *buyer encouragement to use sales technology* was adapted from Study 1. It consists of 7-point Likert-type items anchored by 1 = "strongly disagree" to 7 = "strongly agree." For this construct, we administered a total of 7 items—adding 2 items (BENC1 and BENC3) to the 5-item scale we used in Study 1. The item reliability for BENC2 was low (.18) indicating that only 18% of the variation in the item was accounted for by the latent scale construct, so we dropped the item from the scale. The resulting 6-item scale had an alpha of .84. Confirmatory factor analysis of the final scale indicated a good fit (χ^2 = 19.4 (p= .02), df =9, TLI= .95, RMSEA = .09, GFI = .96, AGFI = .91).

Training Effectiveness. *Training effectiveness* is a scale developed in Study 2 with items on a 7-point Likert-type scale anchored by 1 = "strongly disagree" to 7 = "strongly agree." We administered 7 items and dropped 1 (TREFF2) based on its relatively low item reliability (.21) and relatively low item to total correlation. The final 6-item scale had an alpha of .86 and confirmatory factor analysis provided evidence of a moderately good fit ($\chi^2 = 26.9$ ($p < .01$), df =9, TLI= .93, RMSEA= .12, GFI = .94, AGFI = .85).

Sales Experience. *Sales experience* was measured by a question that asked the respondent's total number of years in sales jobs. While reliability assessments can not be done for single-item measures, this measure is objective and unambiguous.

Using Technology to Access, Analyze, and Communicate Information. Due to the scale purification process of these three scales we have consolidated their discussion into one section. The measures for the three types of sales technology usage are developed in Study 2. They are based on five sets of bipolar adjectives rated on a 7-point scale which combine to form a semantic differential scale (Osgood 1952, Osgood, Suci, & Tennenbaum 1957) for each of the constructs : (1) *using technology to access information, (2) using technology to analyze information, and (3) using technology to communicate information.* We administered 7 item for each technology usage semantic differential scale. While the Cronbach alpha of the pre-purified 7-item scales for all three uses were high (.90 for accessing, .93 for analyzing, and .92 for communicating), the importance of these constructs to this research warranted a more robust evaluation.

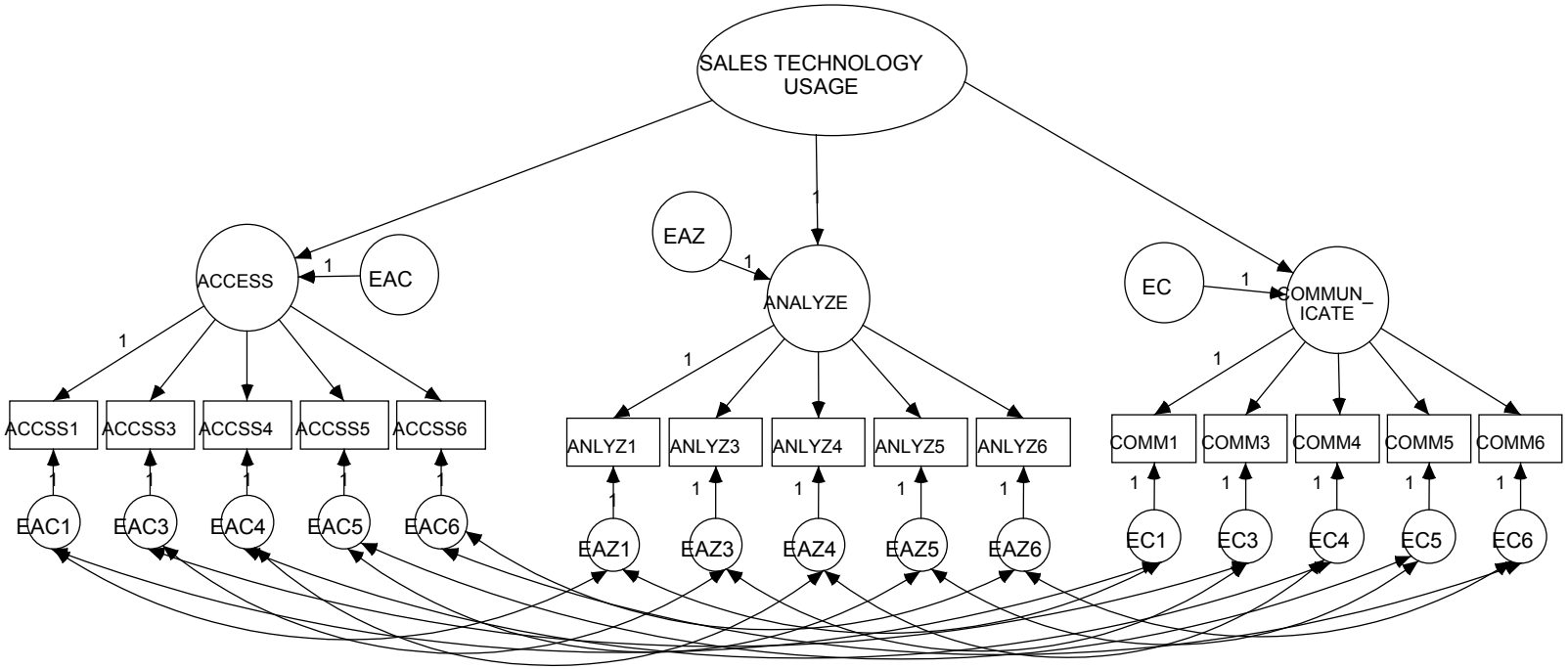
Figure 4.3 shows a second order factor analysis of the three types of sales technology usage. Since the adjective pairs (items) were the same across the three types of usage, we incorporated correlated errors in our model. Two adjective pairs—"not expert" to "expert" and "involuntary" to "voluntary"—correlated with the error terms for the higher order factor and were dropped from all three scales.

The resulting 5-item scales produced Cronbach alphas of .90, .93, and .91, respectively, for accessing, analyzing, and communicating information. Furthermore, the overall model fit statistics from confirmatory factor analyses indicated a good fit for accessing information (χ^2 = 15.5 (*p*= .01), *df* =5, TLI= .96, RMSEA = .12, GFI = .96, AGFI = .88); a moderately good fit for analyzing information (χ^2 = 27.1 (*p*= .01), *df* =5, TLI= .94 RMSEA = .17, GFI = .94, AGFI = .80); and an excellent fit for communicating information (χ^2 = 2.06 , (*p*=.84), *df* =5, TLI= 1.01, RMSEA <.01, GFI = .99, AGFI = .98). The Tucker-Lewis Index for using technology to communicate information is slightly larger than 1.0 and this is probably attributable to sampling fluctuation.

This second order factor model helps establish the discriminant validity among the three types of usage scales. It also provides a higher order factor that we use to relate the types of uses with the general sales technology usage scale that was used in Study 1 and re-administered in Study 2. We discuss that relationship in the next section.

FIGURE 4.3

Second Order Factor Analysis of Types of Technology Uses



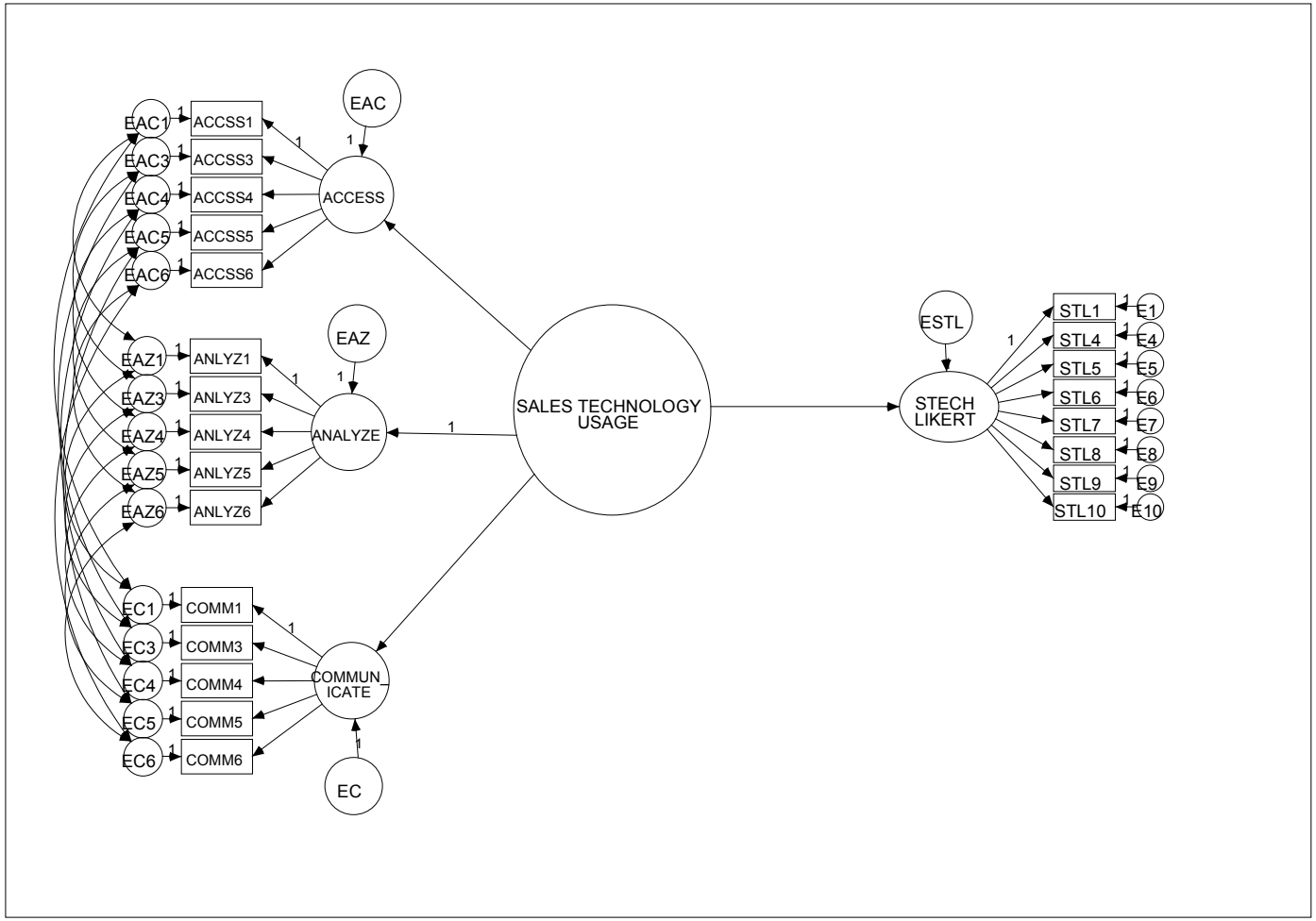
Sales Technology Usage. This Study 1 construct was not used in our model for Study 2, but due to its importance to Study 1, we re-administered the measure here to further validate its properties and to evaluate its relationship with the proposed types of technology uses. In an effort to improve the scale's internal consistency, we considered adding two new items. Cronbach's alpha is partially a function of the number of items in the scale, so adding items that correlate significantly with the other items in the scale may improve the scale's reliability. While those two new items, STL2 and STL3, did correlate highly (.44 and .63, respectively), we do not propose adding them to the scale. The scale's reliability without those two items is .86 versus .88 with the addition of the items. However, empirical research mandates a need for parsimonious scales. So, we decided to use the original (same as Study 1) 8-item sales technology usage scale in evaluating the construct's relationship with the scales for the three proposed types of technology usage. Furthermore, the overall model fit statistics from confirmatory factor analyses indicated an acceptable fit for the 8-item sales technology usage scale (χ^2 = 49.3 (p< .01), df =20, TLI= .91, RMSEA = .10, GFI = .92, AGFI = .86).

Figure 4.4 shows a structural model of the Study 1 sales technology usage scale and its relationship to the types of technology uses. The three types of uses are modeled as second order factors. The higher order factor accounted for a significant portion of the variation in the 3 lower order factors—65% for accessing, 67% for analyzing, and 38% for communicating. Further, the three types of usage—accessing, analyzing, and communicating information—explained 71% of the variation in the more general sales

technology usage scale. The overall model fit statistics indicated that the model had a good fit (χ^2 = 375.2 (p< .01), df =211, TLI = .93, RMSEA =.07, GFI =.82, AGFI =.77, IFI = .94). These findings support our contention that these three types of usage represent a significant portion of the variation in the more general construct used in Study 1. At the same time, it shows that added insight may be possible by considering the three types of technology uses separately.

FIGURE 4.4

Relationship Between Aggregate Sales Technology Usage Scale and Types of Uses



Proposing Integrative Solutions. This relationship-forging task construct was introduced in Study 2 with the administration of 11 items. It is measured using Likert-type items anchored by 1 = "strongly disagree" to 7 = "strongly agree."

Exploratory factor analysis revealed multiple dimensions in the scale. Our conceptualization of proposing integrative solutions was that reverse scored items for the construct would measure one's practice of pursuing distributive outcomes. While these two conceptualizations are certainly opposite in their relationship-building orientation, they did not form the continuum necessary for scale items of opposite polarization. So, items INTEG3, INTEG5, INTEG7, and INTEG10 were dropped from the scale. We dropped two other items from the pre-purified set—including INTEG8 due to its high correlation with our sales planning scale—and INTEG11 to avoid establishing an arguably tautological relationship between technology uses and selling tasks. The resulting 5-item scale produced a Cronbach alpha of .75 with confirmatory analysis fit statistics indicating a very good fit ($\chi^2 = 4.4$ (p= .49), df =5, TLI= 1.00, RMSEA <.01, GFI = .99, AGFI = .97).

Sharing Market Expertise. We administered 9 items to measure sharing market expertise—which is a scale developed in Study 2. It is measured using Likert-type items anchored by 1 = "strongly disagree" to 7 = "strongly agree." We dropped 3 items—MKEXP3, MKEXP8, and MKEXP9—for the following reasons. MKEXP3 performed poorly in terms of its discriminant validity when factor analyzed with other relationship-forging tasks. MKEXP8 demonstrated low item-to-total correlations (<.01) and a low item reliability (<.01) indicating that the item was inconsistent with the

construct it was designed to measure. A number of respondents omitted MKEXP9—perhaps as a result of ambiguity in the item concerning who the salesperson might be informing. So, we dropped that item as well. The resulting 5-item scale produced a Cronbach alpha of .75 and the fit statistics from a confirmatory factor analysis provides evidence of an excellent fit (χ^2 = 10.0 (p= .35), df =9, TLI= .99, RMSEA =.03, GFI = .98, AGFI = .95).

Coordinating Activities. Coordinating activities is a construct and scale developed in Study 2 from the original administration of a set of 9 items. It is measured using Likert-type items anchored by 1 = "strongly disagree" to 7 = "strongly agree."

We dropped 4 items—COORD1, COORD4, COORD 6, and COORD 7—to form the final scale used in Study 2 on the basis of their low item-to-total correlations, relatively low item reliabilities, and inconsistency with expectations on how they would covary with other items. The resulting 5-item scale had an alpha of .79 and overall fit statistics that indicate a very good fit (χ^2 = 10.0, (p= .08), df =5, TLI= .96, RMSEA =.08, GFI = .97, AGFI = .92).

Sales Planning. In an effort to better capture our conceptualization of sales planning and improve the nomological validity of this research, instead of the 12-item *planning for the sale* measure developed by Sujan, Weitz, and Kumar (1994) that we used in Study 1, we adapted items from a measure developed by Gwin (1979). The sales planning scale consists of a 6-point Likert-type items indicating the percentage of times

that an activity is characteristic of a sales call where 1 = "never," 2 = "20%", 3 = "40%," 4 = "60%," 5 = "80%," and 6 = "always."

We administered 7 items for the sales planning scale by selecting items that demonstrated high item-to-total scale correlations in Gwin's research and consistency with our conceptualization of sales planning here. We kept all 7 items in the final scale. The scale was well-behaved in this research—producing an alpha of .84 and overall fit statistics that indicate a good fit (χ^2 = 33.9 (p= .02), df =14, TLI= .92, RMSEA =.10, GFI = .95, AGFI = .89).

Reliance on Specific Sales Technologies. So that we could explicitly link the constructs of the model and use of specific sales technologies, we asked each salesperson to indicate the extent of his or her reliance on each of a number of different hardware and software technologies (using a rating scale anchored by 1= "not at all" and 7= "very heavily").

Convergent and Discriminant Validity of Final Scales.

We used confirmatory factor analytic techniques to assess the dimensionality of all scales. Confirmatory factor analysis models using structural equation modeling techniques showed that the proposed scales were unidimensional with good overall fit statistics for all scales providing evidence of convergent validity.

To test the discriminant validity of the two constructs, we used exploratory factor analysis using the principal factor extraction method with an orthogonal factor rotation (varimax) of all items comprising the two scales. As expected, the items loaded on two

separate factors, each factor representing one of the two performance scales, providing evidence of discriminant validity. Table 4.3 shows the factor loadings for the items comprising the two sales performance scales after a varimax rotation.

TABLE 4.3
Factor Loadings of Sales Performance Items

	FACTOR1	FACTOR2	
ADMIN1	0.27	**0.49**	producing accurate and complete records
ADMIN2	0.14	**0.85**	completing administrative efficiently
ADMIN3	0.16	**0.85**	submitting required reports on time
ADMIN4	0.25	**0.68**	operating within the budgets
ADMIN5	0.11	**0.88**	administrative responsibilities timely
ADMIN6	0.13	**0.88**	getting required paperwork done
RELEFF1	**0.68**	0.16	improve customers profitability
RELEFF2	**0.74**	0.25	building customer business w/ your prods
RELEFF3	**0.61**	0.36	generating sales of new company products
RELEFF4	**0.77**	0.26	listening to real concerns of customers
RELEFF5	**0.60**	0.43	your company acquire good market share
RELEFF6	**0.78**	0.04	understand customers concerns
RELEFF7	**0.59**	0.13	communicate clearly and concisely
RELEFF8	**0.74**	0.24	solutions to customer quest/objections
RELEFF9	**0.61**	0.00	develop mutually profitable partnership

Similarly, we argue that sharing market expertise, proposing integrative solutions, and coordinating activities represent separate kinds of relationship-forging tasks. To test that distinction, we used exploratory factor analysis using principal factor extraction method with orthogonal factor rotations of all items comprising the three scales. As expected, the items loaded on three separate factors, each factor representing one of the relationship-forging tasks, thus providing evidence of discriminant validity

amongst the constructs. Table 4.4 shows the factor loadings for the items comprising the three relationship-forging tasks scales after a varimax rotation.

TABLE 4.4
Factor Loadings of Relationship-Forging Tasks Items

	FACTOR1	FACTOR2	FACTOR3	
COORD2	**0.69**	0.13	0.07	get others to do what my buyers want
COORD3	**0.65**	0.02	0.33	get others to work with counterparts
COORD5	**0.62**	0.46	0.03	coordinate activities between firms
COORD8	**0.84**	0.13	0.07	push others to meet buyers needs
COORD9	**0.66**	0.37	0.11	ensure logistics meets customer
INTEG1	0.19	0.22	**0.75**	finding opportunities benefit both
INTEG2	0.02	0.18	**0.79**	solve problems ways also help firm
INTEG4	0.15	0.17	**0.75**	customers goals w/ company needs
INTEG6	0.27	0.40	**0.36**	evaluate bens and costs to acct
INTEG9	0.41	0.46	**0.31**	winners for firm, buyer, and cons
MKEXP1	0.02	**0.57**	0.15	R: peers rarely me mkt expertise
MKEXP2	0.04	**0.64**	0.22	R: not most knowledgeable
MKEXP4	0.50	**0.54**	0.20	help associates w/ strat tactics
MKEXP5	0.27	**0.53**	0.42	keep buyers aware of mkt change
MKEXP6	0.26	**0.71**	0.08	Others look for expert advice
MKEXP7	0.08	**0.59**	0.12	R: not good at sharing knowledge

We posit that using technology for accessing, analyzing, and communicating information represent distinct types of sales technology uses. Exploratory factor analysis using principal factor extraction method with orthogonal factor rotations of all items comprising the three scales showed items loaded on three separate factors, each factor representing one of the relationship-forging tasks. This provides evidence of discriminant validity amongst the three constructs. Table 4.5 shows the factor loadings for the items comprising the three sales technology usage scales after a varimax rotation.

TABLE 4.5

Factor Loadings of Types of Technology Uses Items

	FACTOR 1	FACTOR 2	FACTOR 3	
ANLYZ1	**0.84**	0.19	0.31	R: tech to analyz/und: frequent
ANLYZ3	**0.84**	0.13	0.32	R: tech to analyz/und: a major emphasis
ANLYZ4	**0.80**	0.14	0.40	R: tech to analyz/und: routine
ANLYZ6	**0.78**	0.30	0.22	R: tech to analyz/und: creative
ANLYZ5	**0.77**	0.23	0.17	tech to analyz/und: confident
COMM1	0.17	**0.90**	0.20	R: tech to commun: frequent
COMM4	0.13	**0.88**	0.24	R: tech to commun: routine
COMM3	0.12	**0.86**	0.26	R: tech to commun: a major emphasis
COMM5	0.22	**0.81**	-0.02	tech to commun: confident
COMM6	0.31	**0.67**	0.13	R: tech to commun: creative
ACCSS4	0.23	0.15	**0.91**	R: tech to access: routine
ACCSS1	0.28	0.16	**0.84**	R: tech to access: frequent
ACCSS3	0.39	0.17	**0.78**	R: tech to access: a major emphasis
ACCSS6	0.46	0.27	**0.55**	R: tech to access: creative
ACCSS5	0.47	0.29	**0.50**	tech to access: confident

Measurement Summary

Table 4.6 summarizes changes made in measures from Study 1 to construct the measures used in Study 2 , their effects on the reliability estimates, and final number of items, and item changes. The table gives reliability estimates for the scales based on Cronbach alpha (where conventionally, reliability estimates above .70 are acceptable, between .80 and .90 are good, and above .90 are strong) and the Tucker-Lewis Index from structural equation modeling of a confirmatory factor model (where conventionally, reliability estimates above .90 are good). All of the scales have Tucker-Lewis Indices above .90 and alphas above .75.

TABLE 4.6
Measurement Summary

	Cronbach Alpha	SEM TLI	Number Final # Items	Number Items Administered	Items Added to Study 1	Number Items Dropped
Sales technology usage	0.86	0.91	8	10	0	2
Relationship effectiveness	0.87	0.96	9	9	3	0
Administrative efficiency	0.88	0.94	6	6	3	0
Company support	0.80	0.91	4	7	3	3
Buyer encouragement	0.84	0.95	6	7	2	1
Training effectiveness	0.87	0.93	6	7	n/a	1
Experience	n/a	n/a	1	1	n/a	0
Accessing info	0.90	0.96	5	7	n/a	2
Analyzing info	0.93	0.94	5	7	n/a	2
Communicating info	0.91	1.01	5	7	n/a	2
Proposing integrative sol.	0.75	0.94	4	11	n/a	7
Sharing market expertise	0.76	0.99	6	9	n/a	3
Coordinating activities	0.79	0.96	5	9	n/a	4
Sales planning	0.84	0.92	7	7	n/a	0

It's useful to provide a brief summary of differences between constructs and measures between Study 1 and Study 2. In Study 1, we proposed and evaluated three new scales (sales technology usage, buyer encouragement to use technology, and company sales technology support). We also adopted 1 scale (sales planning) and adapted 4 scales (practicing adaptive selling behaviors, sales relationship effectiveness, market expertise, and administrative efficiency) from previously published work. We did not administer the practicing adaptive selling scale in Study 2. Further, we used a different sales planning measure. In general, we used the analysis of the properties of the scales from Study 1 to improve the measures in Study 2. While we did not include an aggregate measure of sales technology usage in the model for Study 2, we did re-

administer the scale items to obtain further evidence concerning its external validity and to evaluate its relationship with the specific types of technology usage.

We refined some items on 4 scales that were common to both studies—sales relationship effectiveness, administrative efficiency, buyer encouragement to use sales technology, and company sales technology support. These changes improved the reliabilities on those scales. Study 2's replication of the Study 1 measures (before refinements) produced reliabilities of .84 for sales relationship effectiveness, .64 for administrative efficiency, .68 for company support, and .77 for buyer encouragement. In contrast, the modified scales had improved reliabilities of .87, .88, .80, and .84, respectively.

In Study 1, we relied on a measure of planning from the smart selling literature. However, Study 2's planning scale, adapted from the dissertation work of Gwin (1979) better captured our conceptualization of planning (in a relationship building context) and resulted in a higher reliability estimate (.84).

Study 2 proposes and evaluates 6 more new scales—the 3 types of uses of technology and the 3 relationship-forging tasks. The reliability estimates from these scales range from .75 to .93. Our conceptualizations of the types of technology uses stemmed primarily from the information technology literature that commonly defines information technology as the collection, analysis, storage, and dissemination of information. In a sales context, accessing, analyzing, and communicating seemed to better capture the range of technology applications by business market salespeople. That

is, the information technology literature's definition focuses more the capabilities of technological innovations—namely, the technology itself. For example, "storage" conjures up images of the size of a computer's hard disk drive—the capability of the technological innovation. To the contrary, this research considers technology uses from a perspective more akin to behavioral psychology—that is, from the human element instead of the technology element in the dyadic interface. To elaborate, Mansfield (1966) defined technology as "that which changes the production function." Activities are the primary focus of this research in "changing the production function," while technology is subordinate to the accomplishment of activities. Thus, *technology uses*—important to this research—include those which *facilitate or enable activities* from the perspective of the salesperson. We posited no parallel to information storage. However, the information technology perspective and the behavioral perspective share common ground. Our conceptualizations for using technology to access information relates to "collection"; for using technology to analyze information to "analysis"; and for using technology to communicate information to "disseminating."

Final Scale Means, Standard Deviations, and Bivariate Correlations

Table 4.7 summarizes the means, standard deviations, and bivariate correlations amongst the scales used in Study 2. There is a high correlation between these company sales technology support and training effectiveness (r = .66) combined with a significant coefficient for training effectiveness and an insignificant effect for company support, can be interpreted as evidence that training effectiveness is an integral component of the more general company support.

TABLE 4.7

Means, Standard Deviations, and Correlations Among Constructs [a]

	Mean	Standard deviation	Relationship effectiveness	Administrative efficiency	Coordinating activities	Proposing integrative sol.	Sharing market expertise	Sales Planning	Access	Analyze	Communicate	Experience	Company support	Training effectiveness
Relationship effectiveness	5.53	.82												
Administrative efficiency	5.69	.99	.45											
Coordinating activities	3.95	1.20	.32	.04										
Proposing integrative sol	5.50	.84	.60	.26	.42									
Sharing market expertise	4.72	1.02	.49	.12	.45	.57								
Sales Planning	4.83	.89	.41	.21	.34	.44	.35							
Access	4.69	1.31	.15	.05	.47	.24	.33	.24						
Analyze	4.30	1.37	.23	-.06	.46	.34	.37	.30	.70					
Communicate	5.02	1.30	.28	.09	.31	.43	.38	.21	.47	.46				
Experience	18.16	8.61	.14	.20	-.04	.11	.02	.09	-.04	-.05	.01			
Company support	4.39	1.22	.04	.12	.03	.27	.15	.24	.15	.19	.26	-.03		
Training effectiveness	3.97	1.23	.05	.04	.26	.33	.15	.30	.24	.31	.38	-.01	.66	
Buyer encouragement	4.15	1.23	-.04	-.17	.32	.09	.14	.11	.26	.33	.24	.04	-.07	.19

Data Analysis

We analyzed the proposed relationships among the scales using ordinary least-squares path analysis (Pedhazur and Schmelkin 1991). Maximum likelihood approaches, like LISREL, have advantages in some causal modeling situations. However, they are more robust with a larger sample size than is available here (or for that matter in almost all business-market sales organizations). In addition, we computed product-moment correlations between each construct in the model and the reliance ratings for each of a number of specific sales technologies.

Results

We estimated a series of nine regression models, one for each of Study 2's nine endogenous variables (listed in the left column of Table 4.8). All regression models produced F-statistics that were statistically significant (p.<.01)—each explaining from 9 to 46 percent of the variance in the dependent variable. Thus, we look at these results in more detail.

TABLE 4.8

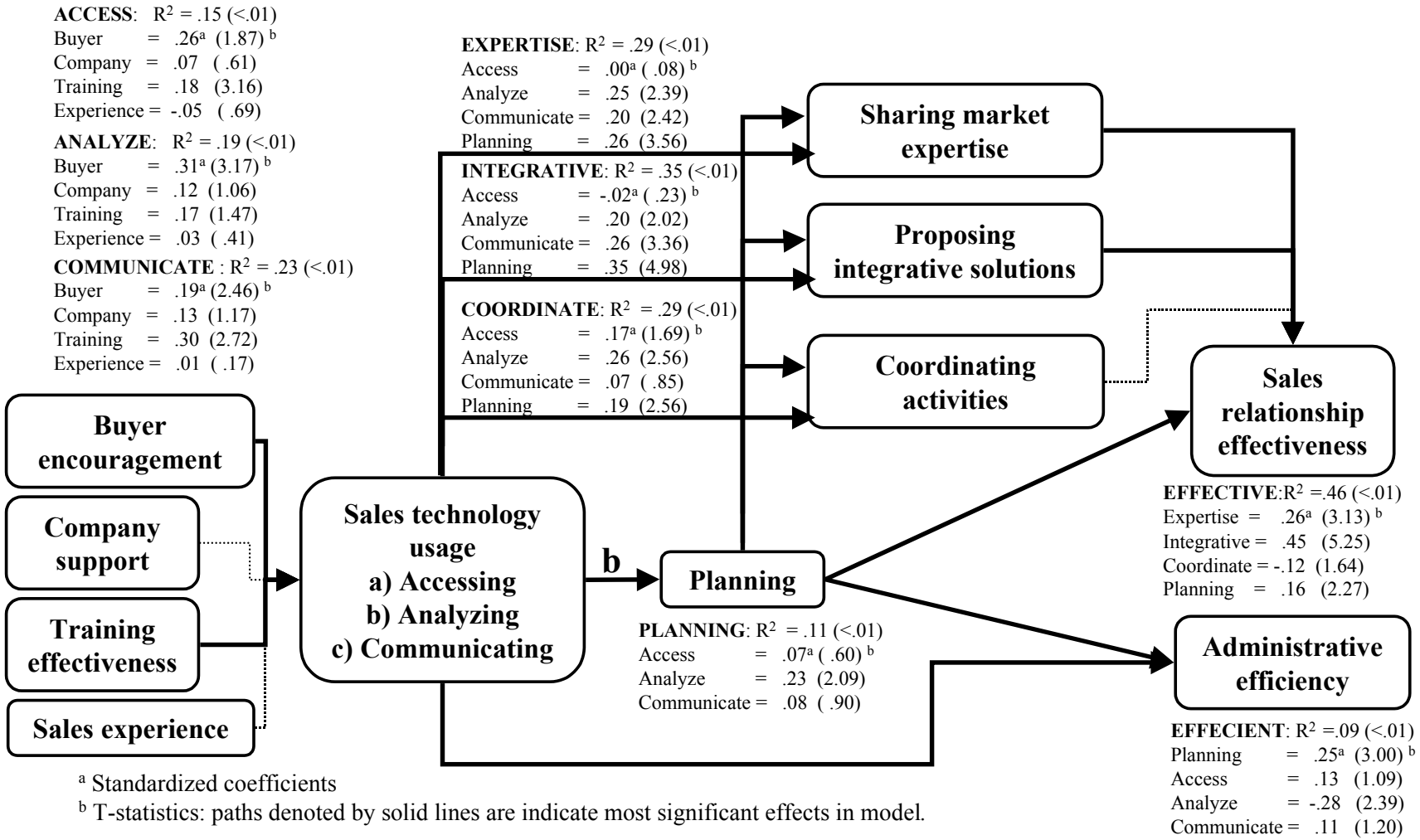
Coefficient Estimates for Paths in Figure 4.1

Dependent Variable	Independent Variables	Overall Model R^2	F	Prob.	Path Coefficients Beta	t-value	Prob.
Using Technology to ACCESS Information		.15	6.4	<.01			
	Buyer Encouragement				.26	1.57	.059
	Company Support				.07	.61	.270
	Training Effectiveness				.18	3.16	<.01
	Experience				-.05	-.69	.245
Using Technology to ANALYZE Information		.19	8.7	<.01			
	Buyer Encouragement				.31	3.17	.001
	Company Support				.12	1.06	.146
	Training Effectiveness				.17	1.47	.072
	Experience				.03	.41	.341
Using Technology to COMMUNICATE Information		.23	10.7	<.01			
	Buyer Encouragement				.19	2.46	<.01
	Company Support				.13	1.17	.121
	Training Effectiveness				.30	2.72	<.01
	Experience				.01	.17	.432
Sharing Market Expertise		.29	14.6	<.01			
	Access				.00	.08	.470
	Analyze				.25	2.39	<.01
	Communicate				.20	2.42	<.01
	Planning				.26	3.56	<.01
Proposing Integrative Solutions		.28	14.4	<.01			
	Access				-.10	1.00	.160
	Analyze				.21	2.03	.022
	Communicate				.31	3.79	<.01
	Planning				.27	3.60	<.01
Coordinating Activities		.29	14.7	<.01			
	Access				.17	1.69	.047
	Analyze				.26	2.56	<.01
	Communicate				.07	.85	.197
	Planning				.19	2.56	<.01
Planning		.11	6.2	<.01			
	Access				.07	.60	.273
	Analyze				.23	2.09	.019
	Communicate				.08	.90	.186
Sales Relationship Effectiveness		.46	31.3	<.01			
	Market Expertise				.26	3.13	<.01
	Integrative Solutions				.45	5.25	<.01
	Coordinate Activities				-.12	1.64	.051
	Sales Planning				.16	2.27	.012
Administrative Efficiency		.09	3.54	<.01			
	Access				.13	1.09	.138
	Analyze				-.28	2.39	<.01
	Communicate				.11	1.20	.117
	Sales Planning				.25	3.00	<.01

Figure 4.5 summarizes the path analysis results. In the path diagram, standardized regression (path) coefficients represent the strength and direction of empirical relationships, and the probability level for the resulting statistic is shown in parentheses.

FIGURE 4.5

Final Study: Summary of Results



[a] Standardized coefficients

[b] T-statistics: paths denoted by solid lines are indicate most significant effects in model.

Types of sales technology usage. The regression of *using sales technology to access information* on the antecedent constructs— buyer encouragement to use sales technology, company support for sales technology, training effectiveness and sales experience —produced an R^2 of .15 (F=6.4, p.< .01). While only the path coefficient for training effectiveness was statistically significant at the p.<.05 level, the path coefficient for buyer encouragement was very close to the value (i.e., p. < .06). This basically supports hypotheses H14a and H16a, while failing to support H15a and H17a.

In Study 1, the path coefficient for buyer encouragement was almost double the coefficient for company support of sales technology. In Study 2, we constructed and modeled training effectiveness as a specific aspect of the more general level of company support. That process allows us to separate the effects of training from the effects of company support beyond training. The results show that the effects of company support, beyond training effectiveness, are not significant in this organization (β =.07, p.<.27). So, the organization's efforts *beyond training* to provide support for using sales technology plays no significant role towards affecting the salesperson's use of technology to access information. However, to compare the company's influence with the buyer's influence on sales technology usage, we compare the coefficients for buyer encouragement to training effectiveness (β =.26 and .18, respectively) —which interestingly shows strong influence from both stakeholders, but consistent with Study 1, we found a stronger influence from the buyer than from the selling firm. Finally, the "generation gap" effect found in Study 1, is not observed here; there is no significant effect of sales experience on using technology to access information.

The regression of *using sales technology to analyze and better understand information* on the antecedent constructs— buyer encouragement to use sales technology, company support for sales technology, training effectiveness and sales experience —produced an R^2 of .19 (F=8.7, *p.*< .01). The path coefficients for training effectiveness and buyer encouragement have the largest effect sizes and are statistically significant at the *p.*<.05 and *p.*<.10 level, respectively—supporting hypotheses H14b and H16b, while failing to support H15b and H17b. Interesting, and consistent with our findings in Study 1, the path coefficient for buyer encouragement is almost double the coefficient for training effectiveness (β =.31 and .17, respectively). As noted above for using technology to access information, the effects of company support on using technology to analyze information, beyond training effectiveness, are not significant in this organization and we find no significant effect of sales experience on using technology to analyze and better understand information.

The regression of *using sales technology to analyze and better understand information* on the antecedent constructs— buyer encouragement to use sales technology, company support for sales technology, training effectiveness and sales experience —produced an R^2 of .23 (F=10.7, *p.*< .01). Here, the path coefficients for training effectiveness and buyer encouragement have the largest effect sizes and are both statistically significant at the *p.*<.01—supporting hypotheses H14c and H16c, while failing to support H15c and H17c. The path coefficient for buyer encouragement is somewhat smaller than the coefficient for training effectiveness (β =.19 and .30, respectively). Again, the effects of company support beyond training effectiveness are

not significant and we find no significant effects of sales experience on using technology to communicate information. These finding indicate that training is a significant means through which the organization can support and influence its salespeople to use technology to communicate information.

Relationship-forging tasks. The regression of *sharing market expertise* on the three types of sales technology usage— accessing, analyzing, and communicating information —and sales planning produced an R^2 of .29 (F=14.6, *p*.< .01). While the path coefficients for using technology to analyze information, communicate information, and sales planning were significant at the $p < .01$ level, the path coefficient for using technology to access data was not significant—supporting hypotheses H1b, H1c, and H6, but not H1a. Furthermore, the path coefficients for analysis, communication, and sales planning (β =.25 , .20, and .26, respectively) indicate that these activities are important towards accomplishing this important relationship-forging task.

The regression of *proposing integrative solutions* on the three types of sales technology usage— accessing, analyzing, and communicating information —and sales planning produced an R^2 of .35 (F=19.7, *p*.< .01). The path coefficients for using technology to analyze information, communicate information, and sales planning were significant, but the path coefficient for using technology to access data was not significant—supporting hypotheses H2b, H2c, and H7, while failing to support H2a. That is, simply using technology to access information does not facilitate the task of proposing integrative solutions.

The regression of *coordinating activities* on the three types of sales technology usage— accessing, analyzing, and communicating information —and sales planning produced an R^2 of .29 (F=14.7, *p.*< .01). Here, both using technology to analyze information and sales planning are statistically significant at the *p.* < .01 level. Additionally, using technology to access information has a statistically significant effect at the *p.*< .05 level. The path coefficient for using technology to communicate information was not statistically significant. These results support hypotheses H3a, H3b, and H7, while failing to support H3c. That is, technology facilitates or enables the accomplishment of coordinating activities more through its use in identifying and understanding which activities warrant action on the part of the salesperson.

Planning. The three types of sales technology usage explain 11 percent of the variance in planning for the sale (F = 6.2, *p.*< .01). This is similar to the effect size in Study 1 for the regression of sales planning on our aggregate measure of sales technology usage. Here, only the path coefficient for using technology to analyze information is significant at the *p.*< .05 level—supporting hypothesis H4b, while failing to support hypothesis H4a and H4b. Thus, planning is effected by using technology to analyze and better understand information and not from using it to access or communicate information.

Sales relationship effectiveness. The regression of sales relationship effectiveness on sharing market expertise, proposing integrative solutions, coordinating activities, and sales planning explained 46 percent of the variance in the dependent variable, which is statistically significant (F = 30.9, *p.*< .01). The individual path

coefficients for sharing market expertise, proposing integrative solutions, and sales planning were each in the hypothesized direction and statistically significant at the *p.* < .01 level—supporting hypotheses H9, H10, and H12. However, while the coefficient for coordinating activities was statistically significant at the *p* .< .05 level, it was not in the posited direction. Thus, given one's level of sharing market expertise, proposing integrative solutions, and sales planning, a sales rep's involvement in coordinating activities has a moderately strong inverse effect on sales relationship effectiveness. Since the bivariate correlation between coordinating activities and sales relationship effectiveness is significant and positive (r = .32), this finding is intriguing and results from the construct's shared variance with the three other constructs.

Administrative efficiency. Sales planning along with using technology to access, analyze, and communicate information accounted for 9 percent of the variance in administrative efficiency (F = 3.54, *p.*<.01). While consistent with the result observed in Study 1, planning for the sale accounted for the majority of the explanatory power, it did not have the only statistically significant path coefficient. Interestingly, the signs of the path coefficients for both accessing and communicating information were in the hypothesized directions; however, the coefficient for using technology to analyze information was both statistically significant and in the opposite direction posited. Collectively, these results support H13, but do not H5a and H5c. Furthermore, they provide evidence to reject the posited positive relationship between using technology to analyze information and administrative efficiency—a result that may be explained, in part, by an inherent time tradeoff between using technology to analyze information and

completed administrative tasks in an efficient manner. Thus, in all, the results support the hypothesized indirect effects of types of technology usage on administrative efficiency through planning for the sales interaction (paths H4a,b,c and H13) but not their direct effects (H5a,b,c). While technology usage does not explain a large portion of the variance in administrative efficiency, it does suggest that using technology to support sales planning is one way to realize returns from technology by enhancing this important aspect of internal sales performance.

Total effects of the three types of technology usage on sales performance. In path analysis, the total effects of independent variables on a dependent variable can be calculated by summing the indirect and direct effects (Bollen 1989). All posited effects on external performance—sales relationship effectiveness—were indirect effects through relationship-forging tasks and sales planning. However, concerning effects on internal performance—administrative efficiency—both direct and indirect effects were proposed and evaluated. First, we discuss the effects on external performance, then we consider the total effects on internal performance.

Figure 4.1 shows the proposed effects of the three types of technology usage on sales relationship effectiveness occur through both direct and indirect effects (through planning) on the three relationship-forging tasks and on planning direct effect on sales relationship effectiveness. To total those effects, we combine their direct effects on sharing market expertise (H1a, H1b, and H1c), proposing integrative solutions (H2a, H2b, and H2c), and coordinating activities (H3a, H3b, and H3c) with their indirect effects through sales planning (H4a, H4b, and H4c through H 6, H7, and H9) and the

ensuing effects of both the relationship-forging tasks and sales planning on external performance (H9, H10, H11, and H12). For example, to calculate the effect of *using technology to access information* on relationship effectiveness that occurs directly through the relationship-forging tasks, we multiplied the sets of standardized path coefficients for H1a, H2a, and H3a (β =.00, -.02., and .17, respectively) by their corresponding path completing coefficients for H9, H10, and H11 (β =.26, -.12, and .45, respectively) and summed the products for a total effect of using technology to access information on relationship effectiveness through the set of relationship-forging tasks of -.029. We then calculated effects of using technology to access information attributed through sales planning (path H4a through path H6 and H9, path H7 and H10, path H8 and H11, and path H12) and add that effect (.025) to the above for effect of -.029 for a total effect of -.004. Thus, for one standard deviation of change in *using technology to access information*, on average, we would expect a .004 decrease in the value for sales relationship effectiveness. That's not a very meaningful effect. Using the same method, we find that using technology to analyze information has an effect of .124 directly through the relationship-forging tasks, .221 through planning, and a total effect of .345 on sales relationship effectiveness. Likewise, using technology to communicate information has an effect of .176 directly through the relationship-forging tasks and .077 through sales planning for a total effect of .253 on relationship effectiveness.

The overall total effect of all three types of sales technology usage on relationship effectiveness would be the total of each aspect's effects which equals .594. Thus, for one standard deviation of change in *all three types* of using technology, on

average, we would expect a .594 change in the value for sales relationship effectiveness. That represents a major effect afforded by technology on relationship effectiveness—through analysis and communications technologies in this sample—and provides evidence to support the view that technology offers significant returns towards achieving relationship building objectives.

The proposed effects of the three types of technology usage administrative efficiency occur through both direct and indirect effects (through planning). To total those effects, we combined their direct effects on administrative efficiency (H5a, H5b, and H5c) with their indirect effects through sales planning (H4a, H4b, and H4c through H13) to get total effects of .148, -.223, .130 for access, analysis, and communication, respectively. Collectively, the total effects of all three types equals .055. Thus, for one standard deviation of change in *all three types* of using technology, on average, we would expect a .055 change in the value for administrative efficiency. That represents a minor effect afforded by technology on internal performance and provides evidence to support the view that efficiency returns from technology are not as good as desired.

Correlation among Study Constructs and Reliance on Specific Technology Tools

To provide a richer view of salespeople's reliance on specific sales technologies, Table 4.9 shows the mean and standard deviation of the respondents' ratings for their reliance on a variety of specific software and hardware technologies as well as their reliance on different sources of information. The table also gives bivariate correlations

between each of the specific technology tools and each of the constructs measured in Study 2.

TABLE 4.9

Correlations Among Constructs and Salesperson's Reliance on Individual Technologies [a]

	Mean	Standard deviation	Experience	Company support	Training effectiveness	Buyer encouragement	Access	Analyze	Communicating	Sharing market expertise	Proposing integrative sol.	Coordinating activities	Sales planning	Relationship effectiveness.	Administrative efficiency
SOFTWARE TECHNOLOGIES															
electronic mail	6.26	1.22	-.13	.05	.13	-.01	.08	.05	.16	.10	.12	.11	.07	.08	.20
word processing	5.08	1.96	-.20	-.02	.12	.22	.28	.19	.26	.16	.19	.32	.13	.10	.07
spreadsheet analysis	5.04	2.04	-.18	-.07	.09	.33	.36	.35	.29	.22	.26	.36	.09	.08	-.06
graphics software	4.96	1.89	-.26	.03	.18	.18	.35	.26	.29	.15	.23	.32	.16	.14	.07
database management	4.45	2.16	-.12	.01	.13	.25	.31	.34	.23	.23	.26	.47	.08	.16	-.07
scanner data analysis	3.93	2.16	-.25	.02	.17	.35	.37	.30	.25	.13	.19	.39	.11	.09	-.02
customer contact mgt	3.83	1.99	-.08	.05	.17	.06	.23	.30	.16	.14	.25	.16	.12	.20	.15
promotion funds / deals	3.66	2.62	.01	-.06	.18	.14	.23	.21	.07	.12	.18	.35	.08	.06	.05
forecasting sales	3.55	2.17	-.20	.00	.14	.14	.28	.34	.05	.19	.21	.41	.16	.14	-.01
time management	3.17	2.03	-.20	.05	.12	.03	.22	.23	.16	.17	.14	.08	.05	.09	.01
retail shelf space	2.90	2.19	-.11	.03	.21	.13	.34	.39	.18	.28	.30	.36	.14	.15	-.08
HARDWARE TECHNOLOGIES															
computer	6.40	1.27	-.08	.14	.15	.21	.33	.25	.25	.12	.22	.15	.13	.10	.13
facsimile machine	4.10	2.17	-.04	-.05	.13	.22	.41	.34	.09	.20	.21	.45	.20	.12	.00
mobile phone	2.41	1.79	-.09	-.09	-.03	.03	.14	.18	.05	.08	.14	.15	.09	.06	-.10
teleconferencing	1.57	1.14	.07	-.19	-.01	.20	.16	.15	-.06	.11	.20	.28	.13	.08	-.08
INFORMATION SOURCES															
reports by others in firm	4.95	1.66	-.15	.09	.11	.14	-.02	-.07	.06	-.09	.06	.03	.15	.09	.25
firms on-line databases	4.50	1.96	-.13	-.03	.13	.24	.22	.16	.20	.05	.13	.32	-.03	.06	.02
reports by customer	2.99	1.82	-.09	.10	.24	.19	.13	.22	-.03	.00	.19	.19	.09	.05	-.01
the internet	2.30	1.75	-.18	-.04	.10	.15	.21	.30	.10	.18	.20	.30	.01	.05	-.12
others in customer firm	2.25	1.51	-.01	.08	.21	.21	.16	.28	.08	.09	.21	.24	.11	.10	-.03
customer databases	2.17	1.65	-.07	-.03	.06	.11	.16	.22	-.01	.04	.07	.19	-.02	.03	-.13

The results suggest some interesting implications:

- The measures for all three types of sales technology usage show significant correlations with salespeople's reliance on the majority of the software and hardware technologies with exceptions being consistent with expectations concerning the types of uses. For example, electronic mail is significantly correlated with using technology to communicate information, but not with using technology to access or analyze information. Sales forecasting, a more data-driven process, is correlated with accessing and analyzing, but not with communicating information. This pattern provides evidence of construct validity.
- The table shows a broad pattern of negative correlations between sales experience and specific sales technologies. Consistent with Study 1 and with H17a, H17b, and H17c, more experienced salespeople do not rely as heavily on many software and hardware technologies as do their counterparts who have been in a sales position for a shorter period of time. This finding is made even more interesting when considering that the regression analysis did not support this hypothesis.
- Table 4-9 results also lend general support to hypotheses H14a, H14b, and H14c as well as H16a, H16b, and H16c, with a pattern of positive correlations between reliance on the individual technologies and both buyer encouragement to use sales technology and training effectiveness. The pattern also supports our earlier finding that training effectiveness represents an important element

of company support—since reliance ratings on none of the hardware or software technologies are highly correlated with company support.

- Several correlations between reliance on individual software technologies and the three relationship-forging tasks are significant which may help explain which technologies help establish the significant relationships between the three types of technology usage and the three relationship-forging tasks. For example the relationship between analysis and sharing market expertise may be explained, in part, by the use of retail shelf space management, database management, spreadsheet analysis, and sales forecasting software.
- Interestingly, the selling smart construct—sales planning—shows significant correlations with only reliance on graphics and sales forecasting software and use of a facsimile machine. This general lack of correlation between the individual technologies combined with somewhat smaller explanatory power (11 percent) when sales planning is regressed on the three types of uses of technology suggest the firm is not realizing potential returns from technology that facilitate or enable sales planning.
- The two sales performance constructs correlate significantly with only a few different specific software technologies. Sales relationship effectiveness correlates significantly with reliance on database management and customer contact management software; while administrative efficiency correlates only with reliance on electronic mail. Some of these correlations mimic relationships among individual sales technologies and the posited indirect

effects. However, the overall direct effects of technology usage on administrative efficiency may be explained, in part, by the relationship between administrative efficiency and electronic mail. Interestingly, there is a significant correlation between reliance on reports by others in their firm and administrative efficiency—suggesting potential for efficiency gains from using this information source.

- Interestingly, particularly in light of the number of studies conducted on information technology spending and productivity, none of the performance measures correlates significantly with reliance on any of the *individual* hardware technologies. Of course, this is consistent with our findings in Study 1, and supports our contention that researchers should look beyond specific technology tools and examine the mechanisms or tasks through which specific technologies affect productivity or performance.

DISCUSSION AND CONCLUSIONS

Study 2's findings generally support our model and the idea that sales technology usage improves sales performance, both directly and indirectly by enhancing selling smart and relationship-forging tasks. This model explains 46 percent of the variance in sales relationship effectiveness through the direct effects of four sales tasks—sharing market expertise, proposing integrative solutions, coordinating activities, and sales planning. Compared to other models of sales performance that explain much less variation (often less than 20 percent) this portion of the model alone—that is, without considering the role of technology in the process—represents a significant contribution

to our understanding of the modern business market sales process. The strong effects of two constructs developed in Study 2—proposing integrative solutions and sharing market expertise—on relationship effectiveness are undeniable. Thus, this portion of the model is significant to this dissertation, in that, it represents an empirical support for the tenants of boundary-blurring theory in only one of its main potential domains—the business market buyer-seller dyad.

In addition to empirically testing tenants of boundary-blurring theory, Study 2 expands our understanding of the technology-to-performance relationship. The three types of sales technology usage directly affect the three relationship-forging tasks—sharing market expertise, proposing integrative solutions, and coordinating activities. The model explains nearly one-third of the variation in each of the relationship-forging tasks. The types of uses also explain about one-tenth of the variation in sales planning. Our model explains about one-tenth of the variation in administrative efficiency. Thus, the types of technology uses indirectly affect external—sales relationship effectiveness—while having both direct and indirect effects on internal aspects of performance—administrative efficiency.

There is not a significant relationship in this sales organization between coordinating activities and relationship effectiveness. However, it important to keep in mind that the relationship between coordinating activities and the relationship effectiveness hypothesized in the model is a normative one. Coordinating activities makes sense and is, almost by definition, an integral part of relationship-building. Recall, however, that the lack of a relationship may be explained by a disparity between

the model's assumption that the salesperson conducts the coordinating activities and the reality that others within the organization may have some of that responsibility. Thus, the selling organization should consider coordinating activities as an important aspect of relationship-forging tasks, almost in spite of the evidence presented here.

Chapter 5

CONCLUSION

At the end of Chapters 2, 3, and 4, we discussed issues specific to those chapters. However, this chapter takes a broader view and discusses some of the more general concerns and issues related to this dissertation.

The findings from Study 1 suggested consideration of other tasks through which sales technology usage affected performance. The process of transitioning this research from a more traditional sales setting to a relational context motivated the need for boundary-blurring theory. Boundary-blurring theory, in turn, helped enrich our understanding of the relationship-forging tasks to which technology could be applied. Then, given the current widespread interest in relationship marketing, Study 2 provides a better understanding of some of the new tasks facilitated or enabled by technology within a relational context and enriches our understanding of the technology-to-performance relationship.

In this chapter, first, we discuss some of the issues related to the findings from this dissertation. Second, we outline some of the limitations to this research. Third, we

discuss some of the implications for managers and scholars. Fourth, we conclude the dissertation.

Discussion

This dissertation proposes that companies should assess the costs and benefits of information technologies not just in terms of their capacity to facilitate tasks critical to sales performance—as has been the case in sales automation—but also in terms of their capacity to *enable* the accomplishment of new tasks.

Getting Beyond the Simple Relationship Between Technology and Performance. This dissertation's specification of different aspects of performance and types of uses of technology, in contrast to an overall performance and technology usage measure, provides additional insight into the specifics of how different types of technology usage influences performance—not just whether a technology-performance relationship exists.

While the focus of this dissertation has been more upon the relationship-building aspect of performance, there are some interesting findings concerning administrative efficiency. Namely, our models have far less explanatory power on the efficiency side, than on the effectiveness side of performance. However, by evaluating the effects of different types of uses in Study 2, we did discover that some tradeoffs exist between using technology to analyze information and administrative efficiency—which we could not find with our aggregate model of sales technology usage employed in Study 1. That result begs the question of whether the use of scales that are more general than our

analysis of individual technologies, but more specific than the three types of uses would reveal other useful findings. Specifically, conceptualizing and evaluating key facets of accessing, analyzing, and communication information might help reveal more insights into the technology to performance relationship. Similarly, the identification of classes or categories of technology that affect the types of uses posited here would add even more diagnostic value to this research—particularly concerning an organization's prospective technology investments.

Applications in Other Settings Where Technology Impacts Process. For those scholars and managers thinking beyond this dissertation and its results, the research outlined here generalizes to other settings in which technology affects process. Our conceptualization of relationship-forging tasks changed somewhat over the course of this research. For example, when first proposed, we considered a construct that we referred to as information leverage. In the early days of this research, we defined that construct as "the tasks involved in salespeople using data to identify and advocate marketing mix alternatives that simultaneously benefit the selling firm, the buying firm, and the buying firm's customer." However, further consideration of the construct led viewing it as mechanism through which the types of uses of technology affect the relationship-forging tasks instead of viewing it as a separate task.

For example, information leverage, as defined, describes the means through which the technology uses affect proposing integrative solutions. But leveraging information really affects other relationship-forging tasks. For example, one can leverage information to coordinate activities or to share market expertise. Thus, our

view is that information leverage, itself, is a means—leveraging information—and not an end. The three relationship-forging tasks proposed here represent the primary tasks that we identified—through interviews of sales managers and a thorough review of the literature.

That is, we first researched the tasks that salespeople engage in to build effective relationships with business customers and then reduced that set of activities to a subset that could be aided through technology usage. By aggregating the activities, we found common links amongst them that formed the three relationship-forging tasks proposed in Study 2: sharing market expertise, coordinating activities, and proposing integrative solutions.

To summarize, first, the research process suggests considering tasks and their relationship to desired process outcomes. Second, the tasks should be grouped as subsets that share common variance. Third, the researcher should identify which of the tasks or activities can be enhanced through the application of information technology. Fourth, the researcher would develop constructs that measured the subset of tasks that fit the technology to performance criterion. Fifth, a model of the proposed relationships between the subsets of tasks and the process would be constructed. Sixth, an administration of the measures would be followed by statistical analyses to "purify" the measures. Seventh, the researcher would test the hypothesized relationships among the constructs using appropriate statistical methods. Finally, a correlation analysis between specific technologies and the facets of activities and technology usage would provide insights into returns from current technologies. So, modeling the relationship between

the technology uses and the objectives of an individual's activities is a straightforward replication of this research that applies in almost any setting where technology affects process.

Technology and Re-Engineering Work Processes. Beyond understanding an existing technology to process relationship, this research has potential impact on organizational structure. The perspective here does not focus on the functionality of specific technologies, but on the impact of technology use on the sales process. This is a simple, but important distinction from the way managers and scholars think about the sales technology issue. Part of the importance of the distinction rests in the manager's control over both investments in technology and design of work processes. That is, one need not limit their consideration of technologies that impact existing work process, but should expand that consideration to consider redesigning work processes to capitalize on effectiveness and efficiency gains afforded through technological innovations.

For example, there may be some advantage to functionally-specialized roles in which individuals assume responsibility for integrating technology across multiple sales teams. Activities such as specialized marketing research inquiries that identify integrative solutions across accounts could be among the responsibilities of the technology specialists. Identification of those integrative solutions is a pre-requisite activity to proposing integrative solutions. That specialist could serve as a source to sales representatives by conducting activities related to the identifying integrative solutions, while a member of the sales team actually proposed the solution. Such specialization in work processes could capitalize on the aptitude and attitudes of various

members of an organization—assigning skilled technology specialists to technology-intensive roles, while employing people with strong interpersonal communication skills with the traditional selling role. Alternatively, of course, an individual may take on the set of activities responsible for the entire technology to process relationship. This structural design decision may well be driven by institutional concerns. Institutional concerns such as organizational cultures that subscribe to the view that persuasive selling skills and the technical skills required to conduct information leverage are mutually exclusive aptitudes within individuals may dictate functionally-specialized structures. On the other hand, opposite cultures may dictate otherwise.

Firm Evaluations of Their Current and Prospective Technologies. Sales managers can use this perspective to better evaluate the integration of prospective technological innovations into their organizations. Further, the analysis that correlates constructs to specific technologies helps sales managers to better assess their salespeople's usage of already available sales technologies and the impact of these technologies on key tasks relevant to the technology-to-performance relationship idiosyncrasies within their firm.

Limitations

Scope. In addition to its contributions, Study 2 also has limitations. It would be useful for future research to consider constructs and relationships that are beyond the scope of the current model. For example, more research into the antecedents of effective sales technology use would improve our understanding of how best to motivate and train salespeople. As one specific suggestion, there is a need for better understanding of user

preferences for various training methods and the effectiveness of those methods, which range from simple reliance on software Help functions to computerized tutorials to more expensive one-on-one training. Many companies yield to cost pressures and rely primarily on online Help features as a way to support use of new sales software, but that seems to ignore Rogers' (1962) basic caveats about how compatibility impacts adoption of innovations. With online help, sales reps who are least comfortable with software and who find it most incompatible with their sales style are, in all likelihood, are faced with a training approach that is also incompatible with their established ways of learning. It would also be useful to expand this research to consider, in more detail, technology's role in shaping the relationship between one's reliance on different sources of information and their perspectives concerning which types of information are effective. For example, individuals who collect their own information and create their own reports may be more effective in using technology to analyze and better understand the specific information needs of their buyers.

Sampling frame. Another limitation here pertains to sampling within a single organization. Sampling within a single organization reduces extraneous variance related to differences in sales jobs, customers, products sold, and the like. Further, sampling and developing estimates of path effects within a single sales organization is consistent with the concept of applying this type of framework to diagnosis of technology effectiveness within a particular company. That isn't a trivial issue given that there is little conceptual or empirical research in marketing to guide the complex and expensive decisions in this domain. Further, as noted above, the general framework proposed here

is not limited to application within a single organization. To the contrary, it can readily be applied to data based on a sampling frame that includes salespeople from a very large number of different firms and selling situations. With a very large sample, there could be both practical and theoretical benefits of expanding the sampling frame to a more heterogeneous sample—and the benefits would be different than the benefits obtained by sampling within a single firm. For example, by collecting data from salespeople in a large number of different firms (and industries) and measuring other characteristics of the selling situation, it will be possible (through statistical controls) to better understand what aspects of the sales job *moderate* relationships between sales technology usage and performance. Ultimately, that knowledge could prove extremely valuable for purposes of evaluating the potential of new technologies that become available.

Future Research

Research on technology. This research lays the foundation for future related studies concerning sales technologies. Broadly speaking, both studies suggest a "template" or general framework for diagnostic modeling within specific sales organizations of the technology-to-performance relationship and how it works through behavioral mechanisms. In that regard, the framework developed here is both robust and flexible. Applied in the context of a specific sales organization, the model specification could be expanded—as we demonstrated in the second study—to include other relevant antecedents, technologies, and criterion variables. To expand the framework even further, for example, in future research, one might wish to broaden the specification of

the model to include job satisfaction, turnover, and other variables that are important to salespeople and their organizations (*c.f.*, Brown and Peterson, 1993).

Another issue for future research involves exploring the relationship between different types of information and technology usage. That is, how does a buyer's preference for more specialized types of information alter the salesperson's use of technology? For example, do buyer's preferences for sales data from their own markets generate needs for salespeople who are more skilled at basic marketing research and more capable of applying technology to accomplish their sales tasks?

Even more broadly, this framework can also be generalized and applied to almost any setting in which technology is thought to influence—directly or indirectly—a process or outcome. An example would be the use of information technology by cross-functional new-product development teams as they work to capture market information to guide their efforts. In such a team environment, are the returns from technology limited to the least adept user—that is, is a team's return on technology driven by a user who represents its least common denominator?

Research on boundary-blurring theory and relationship-forging tasks. Beyond the opportunities for future research related to technology and sales concerns, this research lays the foundation for future research on boundary-blurring theory. Figure 3.1—presented earlier—outlines the broad range of contextual applications of boundary-blurring theory that go beyond this dissertation's focus. There are certainly some relationship-forging tasks that are not facilitated or enabled by technology. For example,

some salespeople use a charismatic selling approach that helps persuade buyers to adopt integrative solutions—an approach that dictates activities that have no relationship to using technology. Furthermore, boundary-blurring activities can be conducted by people who are not salespeople—both tasks those facilitated or enabled by technology uses and those that are not. Finance managers for buying firms, for example, could propose integrative solutions to finance managers from its selling firms that help reduce the administrative costs of deduction management. Additionally, boundary-blurring theory is a theory on interorganizational, not inter-firm relationships. So, its applications extend to scenarios in which multiple organizations within a firm have cause to forge boundaries. For example, members of new-product development teams may conduct coordinating activities that help forge boundaries between marketing and engineering. Finally, future research in boundary-blurring theory needs to pursue its implications beyond two-organization applications to multiple organizations—namely, networks of organizations. In short, there is a vast array of opportunities for future research that builds upon this dissertation.

Implications for Managers and Scholars

This dissertation integrates perspectives from five major streams of research in the literature: information technology and productivity, marketing and technology, selling smart, salesperson performance, and relationship marketing. Most of the previous technology-related literature in sales fits into two broad classifications. Some work focuses on automation and how salespeople use individual tools (for example, see Collins 11-article series 1984-91 or Swenson and Perrella 1992). Other work

underscores the importance of technology to marketing/sales management at a conceptual level (Capon & Glazer 1987; Wedell and Hempeck 1987; Glazer 1991). Study 2 broadens the literature from a focus on individual technologies to the mechanisms by which technology enhances and changes the sales function in a relational context—which provides a managerially relevant means of assessing returns from a portfolio of sales technologies and tasks. This new way of thinking about technology and the tasks that it facilitates or enables provides a theoretical framework that applies across multiple academic disciplines in countless contextual domains. For example, to the biochemist—who relies on vastly different technologies than the salesperson—the framework could be applied to assess returns on different tasks from different technologies. The research process simply entails defining the tasks of interests, measuring performance on those tasks and the types of sales technology usage, and then assessing relationships through methods similar to those outlined herein.

This research conceptualizes and develops the concept of relationship-forging tasks and proposes three types of relationship-forging tasks that are crucial to effective relationship-building: sharing market expertise, proposing integrative solutions, and coordinating activities. Not only do we propose and evaluate measures of this set of relationship-forging tasks, but we also evaluate their effects on longer-term relationship performance outcomes by drawing upon the literature on sales performance (see Brown and Peterson 1993 for a meta- analysis). This research provides strong evidence that supports the importance of relationship-forging tasks to sales performance.

Boundary-blurring theory represents a new way of thinking about the boundaries of organizations and the process of achieving effective collaboration between organizations. Within a business context, managers and scholars should consider relationship-forging tasks as alternatives to vertical integration, mergers, and acquisitions. Its relevance extends far beyond buyer-seller relationships—and for that matter—beyond purely business concerns. Theoretically, boundary-blurring activities exist for any set of organizations regardless of their purpose. For example, governments may want to blur the boundaries between sovereign states for more desirable inter-state outcomes. So while boundary-blurring theory has numerous business applications, its implications go beyond business concerns.

Explaining Variance in Sales Performance. If the concept of technology had not entered this dissertation and its focus shifted to relationship-forging tasks and their effects on performance, our findings contribute significantly to both managerial and scholarly concerns. That is, consider the effects of relationship-forging tasks on sales performance outcomes. Along with planning, the three relationship-forging tasks posited here—which represent a subset of the concept of RFT's—explain 46% of the variation in sales relationship effectiveness. In comparison, current research on sales performance more typically reports R^2 s in the 15 to 20 percent range. So, here, with a very parsimonious models that obviously omit specification of other factors (such as motivation or reward systems) this research contributes new evidence on what makes salespeople effective relationship builders. That, in itself, may be the single most important concern of business market sales managers today. Second to relationship-

building concerns, the impact of sales technology on the selling process adds value to the needs of modern sales managers. Furthermore, this dissertation provides a conceptual approach for linking technology use to the richness and robustness of the smart-selling literature and the herein proposed boundary-blurring theory.

Conclusion

This dissertation proposes and elevates the relationship of different types of sales technology uses on performance. Of primary interest are three key underlying types of information technology uses in sales settings—information access, analysis, and communication. These types of uses cut across individual hardware or software tools and apply to both existing and future technologies. We argue—and provide evidence—that the main impacts on performance are through relationship-forging tasks. As such, this dissertation marks an important first step towards gaining a better understanding of how technology helps forge inter-organizational relationships.

The challenges of understanding the role and impact of sales technology must be addressed. It is an arena that is expensive, difficult to manage, and—by its very nature—fast changing. Further, it is an area where guidance for management decisions has been sparse. Thus, there is a need for scholars to improve conceptualization and theory in this arena.

There is also a need for better methods for evaluating/diagnosing what is (and is not) effective use of sales technology. This is a logical domain for field experiments and studies based on interrupted time-series data (i.e., at the level of the individual sales rep,

territory, division, or firm). Finally, and at a more basic and applied level, there is also a practical need for descriptive research that helps establish bench marks in such areas as technology training, technology "best practices", and the like. It is surprising that there has been so little scholarly research on an area that is so important. However, just as there are challenges in this area, there are also opportunities—so collectively we should address them.

APPENDIX 1: MEASURES USED IN STUDY 1

SALES TECHNOLOGY USAGE

(reliability = .77, mean =4.98, sd. =.85) 1 = "strongly agree" 7 = "strongly disagree"

1. I extensively use information technologies to perform my job.
2. I avoid using the computer unless I have to. **(R)**
3. Sales technology is not one of my key strengths. **(R)**
4. I try to link different sales technologies so that they work together well.
5. I rarely use information technologies in my current sales job. **(R)**
6. Compared to others in sales, I'm technology oriented.
7. I'm better in many other areas than I am in sales technology. **(R)**
8. I can't keep up with all the changes in technology. **(R)**

SALES RELATIONSHIP EFFECTIVENESS

(reliability =.86, =5.68, sd. =.68) 1 = "needs improvement" 7 = "outstanding"

1. Listening attentively to identify and understand the real concerns of your custom.
2. Contributing to your company's acquiring a good market share.
3. Convincing customers that I understand their unique problems and concerns.
4. Quickly generating new sales of new company products.
5. Communicating your own sales presentation clearly and concisely.
6. Working out solutions to a customer's questions or objections.

MARKET EXPERTISE

(reliability = .76, mean =4.99, sd. =.79) 1 = "needs improvement" 7 = "outstanding"

1. Acting as a special resource to other associates who need your assistance.
2. Knowing the benefits and features of competitors' products.
3. Keeping abreast of all your company's production and technological development.
4. Recommending on your own initiative how company operations and procedures can be improved.
5. Knowing the benefits and features of your company products.

ADMINISTRATIVE EFFICIENCY

(reliability = .71, mean =5.92, sd. =.81) 1 = "needs improvement" 7 = "outstanding"

1. Producing accurate and complete records related to orders, expenses, and other routine reports.
2. Submitting required reports on time.
3. Operating within the budgets set by the company.

PRACTICING ADAPTIVE SELLING

(reliability = .67, mean =5.43, sd. =.87) 1 = "strongly agree" 7 = "strongly disagree"

1. I can easily use a wide variety of selling approaches.
2. I vary my sales style from situation to situation.
3. I feel that most buyers can be dealt with in pretty much the same manner. **(R)**
4. I treat all of the buyers pretty much the same. **(R)**

PLANNING FOR THE SALES INTERACTION

(reliability = .69, mean =5.48, sd. =.58) 1 = "strongly agree" 7 = "strongly disagree"

1. I set personal goals for each sales call.
2. I get to my work without spending too much time on planning.
3. I am careful to work on the highest priority tasks first.
4. Planning is an excuse for not working. **(R)**
5. I do not waste time thinking about what I should do. **(R)**
6. I list the steps necessary for getting an order.
7. I keep good records about my account(s).
8. I don't need to develop a strategy for a customer to get the order. **(R)**
9. Planning is a waste of time. **(R)**
10. Because too many aspects of my job are unpredictable, planning is not useful. **(R)**
11. I think about strategies I will fall back on if problems in a sales interaction arise.
12. Each week I make a plan for what I need to do.

BUYER ENCOURAGEMENT TO USE SALES TECHNOLOGY

(reliability = .73, mean =4.97, sd. =.97) 1 = "strongly agree" 7 = "strongly disagree"

1. The buyers that I deal with are annoyed by technology. **(R)**
2. The buyers that I deal with don't expect me to use technology. **(R)**
3. The buyers that I deal with can't be satisfied unless I rely on information technology.
4. The buyers that I deal with are much more interested in personal relationships than data. **(R)**
5. The buyers that I deal with use information technology and expect me too.

COMPANY SALES TECHNOLOGY SUPPORT

(reliability = .75, mean =4.29, sd. =1.16) 1 = "strongly agree" 7 = "strongly disagree"

1. My company adequately equips me with technology tools.
2. My company adequately trains me on the use of sales technology.
3. My company supplies all technologies that I need to perform my sales job.
4. I need more help with technology than I get. **(R)**

APPENDIX 1A: STUDY 1 HOST COMPANY PRE-NOTIFICATION AND COVER LETTER, UNC KENAN-FLAGLER BUSINESS SCHOOL INSTRUCTION LETTER, AND QUESTIONNAIRE

Sent via company e-mail by Study 1 Host Company's Top Sales Executive

To: Sales Personnel
Customer Team
National Account Team Members

Date: December 10, 1996

From: John Doe James, Top Sales Executive

Just as you're constantly trying to figure out how to better serve your accounts, I want to make certain that we are providing you with the sales tools and environment to do well. And to further that objective I'd like to get some inputs from you.

In the next few weeks—after you've had some holiday time with family and friends but before the new year comes on full blast—you'll receive a questionnaire. It focuses on your attitudes and opinions concerning sales technology and other aspects of your job. Your participation in this important survey will help us better understand your perspectives in this arena and also enable us to benchmark against other world-class sales organizations. We'd like to have your responses back by January 10, so please mark your calendar now to set aside about 20 minutes to go through the questionnaire.

We have developed this questionnaire in collaboration with researchers at the University of North Carolina. In fact, you will return the completed questionnaire directly to them. Then they will analyze the responses and prepare a summary report that strictly respects the confidentiality of individual responses. This approach provides an anonymous way for you to give your objective, honest opinions and inputs on the questionnaire issues.

In closing, thank you again for your work throughout the year—and best wishes for a happy holiday season and productive new year in 1997.

Sincerely,
John Doe James

This letter was printed on Study 1 Host Company letterhead paper

To: Sales Personnel
Customer Team
National Account Team Members

Date: December 20, 1996

From: John Doe James, Top Sales Executive

Subject: **University of North Carolina --- SALES TECHNOLOGY SURVEY**

A few days ago I sent Bulletin #123 via document management alerting you to a questionnaire you will receive concerning your opinions about sales technology. Enclosed is that questionnaire.

Your open and honest responses to the questionnaire will give us a better understanding of your needs and help identify ways to improve our sales technology efforts. The survey will also provide us with benchmarks against other sales organizations in the industry. The survey is designed primarily for sales personnel with customer responsibility. However, we would like team leaders and everyone receiving this survey to complete it using your sales experience as a basis for response.

Included is a preaddressed envelope to use to return your completed questionnaire to the researchers we are working with at the University of North Carolina. They will treat your answers with complete confidentiality and their report will not identify any individual in any way.

Please return the completed questionnaire by January 10, 1997.

Thank you for your responses and best wishes for a happy and productive new year in 1997.

Signed John Doe James,
Top Sales Executive

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KENAN-FLAGLER
UNC-CHAPEL HILL

SALES TECHNOLOGY SURVEY

The purpose of this study is to get your expert opinions concerning your use of sales technologies. This is not a "test." There is no correct answer to any question. Please circle the answer that best matches your opinion on each item.

Please read each question carefully and decide how you feel about it. Even if you are not certain about the exact answer to a question, mark the answer that is most like your opinion and go to the next question. Don't worry or puzzle over individual questions. Work quickly and record your immediate thoughts. Some of the questions may seem similar to you or may not be worded exactly the way you would like them to be. Even so, give your best answer and continue working through the questionnaire. It is important that you answer all the questions. Your approximate answer is far more useful than an incomplete response.

The survey should take about 20 -30 minutes to complete.

In the interests of our objectives to consolidate and analyze the results of this survey, we request that you complete and return it as soon as possible. We hope to receive the surveys no later than January 10, 1997.

We will use the number marked on the questionnaire to check off completed surveys. However, your individual responses will be kept strictly confidential to the researchers. The report to your company will be based on aggregate responses and no individuals will be identified.

Thanks in advance for your time and effort in completing this most important survey.

Gary K. Hunter

Gary K. Hunter
Project Director
Survey Control Number _____

Please indicate the extent to which you rely on each of the following information technologies in your sales job.

		I rely on this tool: *Very Heavily*						*Not at all*
1.	Telephone (not mobile)	1	2	3	4	5	6	7
2.	Mobile telephone	1	2	3	4	5	6	7
3.	Telephone answering machine	1	2	3	4	5	6	7
4.	Voice mail	1	2	3	4	5	6	7
5.	Pager	1	2	3	4	5	6	7
6.	Facsimile machine	1	2	3	4	5	6	7
7.	Electronic mail	1	2	3	4	5	6	7
8.	Chat mode (on -line) access to others within your firm	1	2	3	4	5	6	7
9.	Personal digital assistant	1	2	3	4	5	6	7
10.	Video tapes from firm's management	1	2	3	4	5	6	7
11.	Desktop computer	1	2	3	4	5	6	7
12.	Laptop computer	1	2	3	4	5	6	7
13.	Dial in Modem	1	2	3	4	5	6	7
14.	Document Scanner	1	2	3	4	5	6	7
15.	CD ROM	1	2	3	4	5	6	7
16.	Black & white printer	1	2	3	4	5	6	7
17.	Color printer	1	2	3	4	5	6	7
18.	Teleconferencing (via telephones)	1	2	3	4	5	6	7
19.	Video-conferencing (via television / satellite)	1	2	3	4	5	6	7
20.	Video-conferencing (via personal computer)	1	2	3	4	5	6	7
21.	Tape recording / dictation device	1	2	3	4	5	6	7
22.	Camera (still shot)	1	2	3	4	5	6	7
23.	Paper (hard copy) documents for sales presentations	1	2	3	4	5	6	7
24.	Computer-based sales presentations	1	2	3	4	5	6	7
25.	Transparencies using overhead projector for presentations	1	2	3	4	5	6	7
26.	Computer projection for sales presentations (LCD panel)	1	2	3	4	5	6	7
27.	Video camera	1	2	3	4	5	6	7
Computer Software for:								
28.	word processing	1	2	3	4	5	6	7
29.	spreadsheet analysis	1	2	3	4	5	6	7
30.	presentations (e.g. Harvard Graphics / Powerpoint)	1	2	3	4	5	6	7
31.	database management	1	2	3	4	5	6	7
32.	forecasting sales	1	2	3	4	5	6	7
33.	managing promotion funds	1	2	3	4	5	6	7
34.	designing retail shelf space	1	2	3	4	5	6	7
35.	time management	1	2	3	4	5	6	7
36.	customer profile / contact management	1	2	3	4	5	6	7
37.	order entry	1	2	3	4	5	6	7
38.	order status	1	2	3	4	5	6	7

Please indicate how effective each of the following types of information are for earning commitment from your buyers.

Information from or about:

	Totally Ineffective						*Extremely Effective*
1. test marketing results	1	2	3	4	5	6	7
2. data collected in retail stores	1	2	3	4	5	6	7
3. your firm's historical shipments to the customer	1	2	3	4	5	6	7
4. your customer's distribution costs	1	2	3	4	5	6	7
5. your firm's customer service statistics	1	2	3	4	5	6	7
6. your firm's distribution costs	1	2	3	4	5	6	7
7. consumer buying habits for the brand or category	1	2	3	4	5	6	7
8. demographic characteristics of your customer's market	1	2	3	4	5	6	7
9. your firm's marketing effectiveness	1	2	3	4	5	6	7
10. competitors' marketing effectiveness	1	2	3	4	5	6	7
11. your firm's advertising plans	1	2	3	4	5	6	7
12. performance differences among products	1	2	3	4	5	6	7
13. product demonstrations done in person	1	2	3	4	5	6	7
14. product demonstrations done via media	1	2	3	4	5	6	7
15. product historical profitability	1	2	3	4	5	6	7
16. product historical sales volume	1	2	3	4	5	6	7
17. marketing results from geographic areas not served by your customer	1	2	3	4	5	6	7

How useful to you is each of the following types of training when you are *initially* learning about a new technology that is intended to support your sales efforts?

	Totally Ineffective						*Extremely Effective*
1. self-paced computerized tutorials	1	2	3	4	5	6	7
2. video-training tapes	1	2	3	4	5	6	7
3. self-study using printed materials	1	2	3	4	5	6	7
4. training by your manager or supervisor	1	2	3	4	5	6	7
5. Q&A sessions with a knowledgeable peer	1	2	3	4	5	6	7
6. lecture-style presentations	1	2	3	4	5	6	7
7. "learn-as-you-use" approach with on-line help systems	1	2	3	4	5	6	7
8. one-on-one training with an expert	1	2	3	4	5	6	7
9. a workshop with "hands-on" instruction	1	2	3	4	5	6	7

When you run into a problem while you are using computer software to support your sales effort, how effective is each of the following types of support?

	Totally Ineffective						*Extremely Effective*
1. software help screens (i.e., not printed)	1	2	3	4	5	6	7
2. printed reference materials	1	2	3	4	5	6	7
3. hot-line telephone calls to internal technical support group	1	2	3	4	5	6	7
4. telephone calls to external technical support group	1	2	3	4	5	6	7
5. advice from expert colleagues	1	2	3	4	5	6	7
6. electronic bulletin boards or online services	1	2	3	4	5	6	7

For each of the following statements, please indicate how accurately it describes the customers that you deal with.

My customers tend to view analysis of scanner data as:

	Strongly Disagree						*Strongly Agree*
1. completely overwhelming	1	2	3	4	5	6	7
2. useful even if it is based only on a sample of stores	1	2	3	4	5	6	7
3. very persuasive	1	2	3	4	5	6	7
4. highly misleading	1	2	3	4	5	6	7
5. a key part of a sales presentation	1	2	3	4	5	6	7
6. worthwhile only if it includes details for every store	1	2	3	4	5	6	7
7. too complicated	1	2	3	4	5	6	7
8. less relevant than a good smile	1	2	3	4	5	6	7

The buyers that I deal with:

	Strongly Disagree						*Strongly Agree*
1. want analysis that is only possible by using a computer	1	2	3	4	5	6	7
2. are annoyed by technology	1	2	3	4	5	6	7
3. depend on me when it comes to information technology	1	2	3	4	5	6	7
4. don't expect me to use technology	1	2	3	4	5	6	7
5. can't be satisfied unless I rely on information technology	1	2	3	4	5	6	7
6. are much more interested in personal relationships than data	1	2	3	4	5	6	7
7. use information technology and expect me to	1	2	3	4	5	6	7

The following statements describe circumstances which might exist when you are trying to make a sale. Circle the number that best indicates the percentage of sales situations you face that fit the situation described in the statement. Each question is independent: your answers do not need to add to 100% or any other number. Circle only one response for each item.

	Percentage of Situations						
1. The purchase decision is made quite quickly.	0%	10%	30%	50%	70%	90%	100%
2. A number of people are involved in the purchase decision.	0%	10%	30%	50%	70%	90%	100%
3. The customer needs a lot of information before making a purchase decision.	0%	10%	30%	50%	70%	90%	100%
4. The customer considers the purchase decision to be routine.	0%	10%	30%	50%	70%	90%	100%
5. The purchase decision evolves over a long time period.	0%	10%	30%	50%	70%	90%	100%

4

To help us to understand more about you and your responsibilities, please answer the following questions to the best of your ability. This section is concerned with your opinions about your current sales responsibilities.

		Strongly Disagree						*Strongly Agree*
1.	Sales technology is not one of my key strengths.	1	2	3	4	5	6	7
2.	I set personal goals for each sales call.	1	2	3	4	5	6	7
3.	I have to do things that should be done differently.	1	2	3	4	5	6	7
4.	I have clear, planned goals and objectives for my selling position.	1	2	3	4	5	6	7
5.	I receive an assignment without the support to complete it.	1	2	3	4	5	6	7
6.	I know that I have divided my time properly while performing the tasks concerned with my selling position.	1	2	3	4	5	6	7
7.	I have to buck a rule or policy in order to carry out an assignment.	1	2	3	4	5	6	7
8.	I know what my responsibilities are in my selling position.	1	2	3	4	5	6	7
9.	I am among the first to purchase the latest technology for my use at home.	1	2	3	4	5	6	7
10.	My company adequately equips me with technology tools.	1	2	3	4	5	6	7
11.	My company adequately trains me on the use of sales technology.	1	2	3	4	5	6	7
12.	I work with two or more team members who use sales technology quite differently.	1	2	3	4	5	6	7
13.	I get to my work without spending too much time on planning	1	2	3	4	5	6	7
14.	I can not get all my work done in the time allotted.	1	2	3	4	5	6	7
15.	The computer creates more work than it saves.	1	2	3	4	5	6	7
16.	The day my sales job mandates my use of information technologies is the day I will find another job.	1	2	3	4	5	6	7
17.	I wouldn't be nearly as effective without my computer.	1	2	3	4	5	6	7
18.	I can easily use a wide variety of selling approaches.	1	2	3	4	5	6	7
19.	This company is spending too much money on sales technology.	1	2	3	4	5	6	7
20.	I vary my sales style from situation to situation.	1	2	3	4	5	6	7
21.	I have always been fascinated by advances in technology.	1	2	3	4	5	6	7
22.	My analytical skills explain most of my success as a salesperson.	1	2	3	4	5	6	7
23.	I avoid using the computer unless I have to.	1	2	3	4	5	6	7
24.	I am careful to work on the highest priority tasks first.	1	2	3	4	5	6	7
25.	I receive incompatible requests from two or more people.	1	2	3	4	5	6	7
26.	Planning is an excuse for not working.	1	2	3	4	5	6	7
27.	I extensively use information technologies to perform my job.	1	2	3	4	5	6	7
28.	I try to link different sales technologies so that they work together well.	1	2	3	4	5	6	7
29.	I do not waste time thinking about what I should do.	1	2	3	4	5	6	7
30.	I rarely use information technologies in my current sales job.	1	2	3	4	5	6	7
31.	I list the steps necessary for getting an order.	1	2	3	4	5	6	7
32.	Compared to others in sales, I'm technology oriented.	1	2	3	4	5	6	7
33.	My charismatic selling style explains most of my success as a salesperson.	1	2	3	4	5	6	7
34.	I feel that most buyers can be dealt with in pretty much the same manner.	1	2	3	4	5	6	7
35.	My company supplies all technologies that I need to perform my sales job.	1	2	3	4	5	6	7
36.	Only salespeople who lack basic selling skills need the "crutch" provided by the computer.	1	2	3	4	5	6	7
37.	I keep good records about my account(s).	1	2	3	4	5	6	7
38.	I don't need to develop a strategy for a customer to get the order.	1	2	3	4	5	6	7
39.	I do things that are apt to be accepted by one and not accepted by others.	1	2	3	4	5	6	7
40.	I'm better in many other areas than I am in sales technology.	1	2	3	4	5	6	7

This page is a continuation of the previous section

		Strongly Disagree						*Strongly Agree*
41.	I work with two or more groups who operate quite differently.	1	2	3	4	5	6	7
42.	I receive an assignment without adequate resources and materials to execute it.	1	2	3	4	5	6	7
43.	I treat all of the buyers pretty much the same.	1	2	3	4	5	6	7
44.	My company expects salespeople to master technology.	1	2	3	4	5	6	7
45.	Information technology is the most overrated phenomenon of our time.	1	2	3	4	5	6	7
46.	Salespeople here need more help with technology than they get.	1	2	3	4	5	6	7
47.	I work on necessary things.	1	2	3	4	5	6	7
48.	I feel certain about how much authority I have in my selling position.	1	2	3	4	5	6	7
49.	We mainly waste time trying to use sales technology.	1	2	3	4	5	6	7
50.	Planning is a waste of time.	1	2	3	4	5	6	7
51.	Because too many aspects of my job are unpredictable, planning is not useful.	1	2	3	4	5	6	7
52.	I think about strategies I will fall back on if problems in a sales interaction arise.	1	2	3	4	5	6	7
53.	A salesperson in this firm who isn't competent with information technology won't last long.	1	2	3	4	5	6	7
54.	I know exactly what is expected of me in my selling position.	1	2	3	4	5	6	7
55.	The executive that I report to doesn't care if salespeople use information technology.	1	2	3	4	5	6	7
56.	We spend way too much time on the computer.	1	2	3	4	5	6	7
57.	Success in my firm requires that salespeople be proficient with information technology.	1	2	3	4	5	6	7
58.	I can sell far more products because of information technology.	1	2	3	4	5	6	7
59.	I can't keep up with all the changes in technology.	1	2	3	4	5	6	7
60.	I receive clear explanations of what has to be done in my selling position.	1	2	3	4	5	6	7
61.	A salesperson who is good with sales technology earns better compensation.	1	2	3	4	5	6	7
62.	I use my computer to keep records about my account(s).	1	2	3	4	5	6	7
63.	Each week I make a plan for what I need to do.	1	2	3	4	5	6	7

On each of the following items, please rate how well you have performed relative to an average salesperson in similar selling situations.

		Need Improvement						*Outstanding*
1.	Acting as a special resource to other associates who need your assistance.	1	2	3	4	5	6	7
2.	Knowing the benefits and features of competitors' products.	1	2	3	4	5	6	7
3.	Keeping abreast of all your company's production and technological developments.	1	2	3	4	5	6	7
4.	Quickly generating new sales of new company products.	1	2	3	4	5	6	7
5.	Producing accurate and complete records related to orders, expenses, and other routine reports.	1	2	3	4	5	6	7
6.	Recommending on your own initiative how company operations and procedures can be improved.	1	2	3	4	5	6	7
7.	Submitting required reports on time.	1	2	3	4	5	6	7
8.	Operating within the budgets set by the company.	1	2	3	4	5	6	7
9.	Listening attentively to identify and understand the real concerns of your customers.	1	2	3	4	5	6	7
10.	Knowing the benefits and features of your company's products.	1	2	3	4	5	6	7
11.	Contributing to your company's acquiring a good market share.	1	2	3	4	5	6	7
12.	Convincing customers that I understand their unique problems and concerns.	1	2	3	4	5	6	7
13.	Communicating your own sales presentation clearly and concisely.	1	2	3	4	5	6	7
14.	Working out solutions to a customer's questions or objections.	1	2	3	4	5	6	7

GENERAL INFORMATION

1. Of the following, which best describes your main buyer's industry:
   [ ] Apparel [ ] Mass Merchandiser [ ] Wholesaler / Distributor
   [ ] Food/Drug Retailer [ ] Healthcare Organization [ ] Government
   [ ] Other _____

2. Are you a member of a sales team that is dedicated to the needs of a single customer?
   [ ] No [ ]Yes If yes, how many members are on your team? _____

3. Please check the percentage that best approximates the amount of time you spend for each of the following items in your job. Please note that the items do not have to total to 100%.

   on your computer
   [ ] 0% [ ] 10% [ ] 30% [ ] 50% [ ] 70% [ ] 90% [ ] 100%

   interacting with customer(s)
   [ ] 0% [ ] 10% [ ] 30% [ ] 50% [ ] 70% [ ] 90% [ ] 100%

   doing non-selling related computer work
   [ ] 0% [ ] 10% [ ] 30% [ ] 50% [ ] 70% [ ] 90% [ ] 100%

4. How many years of experience do you have in sales?
   [ ] Less than 1 year [ ] more than 7 but less than 10 years
   [ ] more than 1 but less than 3 years [ ] more than 10 but less than 15 years
   [ ] more than 3 but less than 7 years [ ] More than 15 years

5. Which of the following best describes your educational background?
   [ ] Did not complete high school [ ] College degree/ non-technical major
   [ ] High school graduate [ ] College degree/ technical major
   [ ] Trade school graduate: beyond high school [ ] M.B.A. or equivalent (e.g. M.S.M)
   [ ] Some college [ ] Other graduate degree

6. What is your age?
   [ ] Less than 20 years old [ ] 35-44 years old [ ] 65 or more years old
   [ ] 21 - 25 years old [ ] 45-54 years old
   [ ] 26-34 years old [ ] 55-64 years old

7. What is your gender? [ ] Female [ ] Male

8. Which of the following descriptions best describes your current role?
   [ ] Shelf technology specialist [ ] Major account team leader
   [ ] Major account executive [ ] Territory sales manager
   [ ] In-store sales representative [ ] Other _____

9. How many years have you been using a computer to support your work function? _____ # of Years

10. Do you use a computer for home activities? [ ]Yes [ ] No

11. Were you promoted within the last two years?[ ] No [ ]Yes
    If yes, were your computer skills an important contributing factor? [ ]Yes [ ] No

12. In minutes, how much time did you spend on this questionnaire? _____ # of Minutes

Thank you very much for your participation in this survey. Please return the survey in the enclosed pre-addressed envelope to the researchers at the University of North Carolina: The Kenan-Flagler Business School, UNC- Chapel Hill, ATTN: Gary K. Hunter, Marketing Department, Sales Technology Survey, Chapel Hill, NC 27599-3490.

APPENDIX 2: MEASURES USED IN STUDY 2

ACCESS INFORMATION

(reliability = .90, mean =4.69, SD. =1.31)

Compared to other salespeople, ***my use of sales technology to ACCESS*** information about products, sales calls, orders, sales, accounts, and the like is best described as …

frequent	1	2	3	4	5	6	7	infrequent**(R)**
a major emphasis	1	2	3	4	5	6	7	not an emphasis**(R)**
routine	1	2	3	4	5	6	7	sporadic**(R)**
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative**(R)**

ANALYZE INFORMATION

(reliability = .93, mean =4.30, SD. =1.37)

Compared to other sales people, ***my use of sales technology to ANALYZE and BETTER UNDERSTAND*** information about sales, profits, and costs for different products, categories, time periods, market areas and the like is best described as …

frequent	1	2	3	4	5	6	7	infrequent**(R)**
a major emphasis	1	2	3	4	5	6	7	not an emphasis**(R)**
routine	1	2	3	4	5	6	7	sporadic**(R)**
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative**(R)**

COMMUNICATE INFORMATION

(reliability = .91, mean =5.02, SD. =1.30)

Compared to other sales people, ***my use of sales technology to COMMUNICATE*** with other people inside and outside of the firm is best described as …

frequent	1	2	3	4	5	6	7	infrequent**(R)**
a major emphasis	1	2	3	4	5	6	7	not an emphasis**(R)**
routine	1	2	3	4	5	6	7	sporadic**(R)**
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative**(R)**

SALES RELATIONSHIP EFFECTIVENESS [a]

(reliability =.87, mean =5.53, SD. =.68) 1 = "needs improvement" 7 = "outstanding"

1. Working with customers to help them improve their profitability. **(NEW ITEM)**
2. Building your customer's business with your products. **(NEW ITEM)**
3. Quickly generating new sales of new company products.
4. Listening attentively to identify and understand the real concerns of your customers.
5. Contributing to your company's acquiring a good market share.
6. Convincing customers that I understand their unique problems and concerns.
7. Communicating your own sales presentation clearly and concisely.
8. Working out solutions to a customer's questions or objections.
9. Working with buyers to develop a partnership that's profitable to both firms. **(NEW ITEM)**

[a] Item changes to scales used in Study 1 and reverse scored items are noted after the item in bold lettering.

ADMINISTRATIVE EFFICIENCY [a]

(reliability =.88, mean =5.69, SD. =.97) 1 = "needs improvement" 7 = "outstanding"

1. Producing accurate and complete records related to orders, expenses, and other routine reports.
2. Completing administrative requirements efficiently. **(NEW ITEM)**
3. Submitting required reports on time.
4. Operating within the budgets set by the company.
5. Addressing my administrative responsibilities in a timely manner. **(NEW ITEM)**
6. Getting required "paperwork" done. **(NEW ITEM)**

SHARING MARKET EXPERTISE

(reliability = .76, mean =4.72, SD. =1.02) *1 = "strongly disagree" 7 = "strongly agree"*

1. My peers rarely look to me for market expertise. **(R)**
2. Compared to other salespeople, I'm not the most knowledgeable resource on our markets. **(R)**
3. I often help my associates with their sales strategies and tactics.
4. I keep my buyers aware of market changes.
5. Others in my firm look to me for expert advice.
6. I'm not very good at sharing knowledge with others on how they should deal with their accounts. **(R)**

PROPOSING INTEGRATIVE SOLUTIONS

(reliability = .75, mean =5.50, SD. =.84) *1 = "strongly disagree" 7 = "strongly agree"*

1. I'm good at finding opportunities that benefit both my firm and my customer's.
2. I try to solve customer problems in ways that also help my firm.
3. I look for good ways to integrate my customer's goals with my company's needs.
4. I try to develop plans that will be successful for the customer.
5. I come up with ideas that are winners for my firm, the buyer, and final consumers.

COORDINATING ACTIVITIES

(reliability = .79, mean =3.95, SD. =1.20) *1 = "strongly disagree" 7 = "strongly agree"*

1. I get others in my company to do what my buyers want.
2. When necessary, I get others in my firm to work with their counterparts in my buyer's firm.
3. I coordinate activities between my firm's employees and my account(s).
4. I push others in my firm to meet my buyer's needs.
5. I work to ensure that my firm's logistics meet our customer's needs.

SALES PLANNING

(reliability = .84, mean =4.83, SD. =.89)1= Never, 2= 20%, 3 = 40%, 4 = 60%, 5 = 80%, and 6 = Always

The statements below describe a number of different activities. Please indicate what percent of the time the activity is characteristic of your sales calls by circling one of the responses provided by each statement. 1= Never, 2= 20%, 3 = 40%, 4 = 60%, 5 = 80%, and 6 = Always

Before making a sales call…

1. I plan my presentation to respond to objections I anticipate from the buyer.
2. I evaluate the specific information needs of the buyer I will be meeting.
3. I collect information which will forewarn me of possible problems with the account.
4. I reconstruct the details of the last call on the account.
5. I consciously try to anticipate the events which are likely to occur in the call.
6. I try to determine which of my products will have the most success at that account.
7. I evaluate whether the time I will spend on a particular product or category is justified relative to my objectives.

[a] Item changes to scales used in Study 1 and reverse scored items are noted after the item in bold lettering.

BUYER ENCOURAGEMENT TO USE SALES TECHNOLOGY [a]

(reliability = .84, mean =4.15, SD. =1.23) 1 = "strongly disagree" 7 = "strongly agree"

For each of the following statements, indicate how accurately it describes the buyers that you deal with:

The buyers that I deal with:

1. see value in using information technology to improve decisions **(NEW ITEM)**
2. encourage me to support my proposal with data **(NEW ITEM)**
3. don't expect me to use technology **(R)**
4. can't be satisfied unless I rely on information technology
5. are much more interested in personal relationships than data **(R)**
6. use information technology and expect me to

GENERAL COMPANY SALES TECHNOLOGY SUPPORT [a]

(reliability = .80, mean =4.39, SD. =1.22) *1 = "strongly disagree" 7 = "strongly agree"*

1. My company doesn't gives me the support I need to effectively use sales technologies. **(R) (NEW ITEM)**
2. This firm needs to give me more help with technology than I get. **(R) (NEW ITEM)**
3. I need more help with technology than I get. **(R)**
4. This company doesn't help when I have problems with sales technologies. **(R) (NEW ITEM*)***

TRAINING EFFECTIVENESS

(reliability = .87, mean =3.97, SD. =1.23) *1 = "strongly disagree" 7 = "strongly agree"*

1. Sales technology training in this firm is effective.
2. My sales technology training has been "world class."
3. Training has helped me improve my sales technology skills.
4. The training I've had on sales technology tools is not adequate. **(R)**
5. This firm needs to revamp its sales technology training programs. **(R)**
6. I have had effective training on sales technology tools.

[a] Item changes to scales used in Study 1 and reverse scored items are noted after the item in bold lettering.

APPENDIX 2A—STUDY 2 HOST COMPANY PRE-NOTIFICATION AND COVER LETTER, UNC KENAN-FLAGLER BUSINESS SCHOOL INSTRUCTION LETTER, AND QUESTIONNAIRE 1

Sent via company e-mail by Study 2 Host Company's Sales Manager and Information Manager

SURVEY PRE-NOTIFICATION LETTER

To: Sales Representatives
Customer Category Managers
Customer Business Team Leaders
Sales Staff

Date: February 22, 1999

From: John Doe Brown, Sales Manager
John Doe Smith, Regional Information Manager

Subject: **2nd Study Host Company Name / UNC SALES TECHNOLOGY SURVEY**

In a couple of weeks, you will receive a questionnaire concerning your opinions about sales technology. We've worked with researchers from the University of North Carolina to construct the questionnaire to improve our use of technology through a better understanding of your thoughts and opinions.

Of course, your open and honest responses to the questionnaire will give us a better understanding of your needs and help identify ways to improve our sales technology efforts. The survey is designed primarily for sales personnel with customer responsibility. However, we would like team leaders and other sales-related personnel to participate in the survey by using your sales experience as a basis for response.

Your responses will be returned directly to the researchers at UNC. They will then use your input to provide us with a report that summarizes your responses as a group. Thus, the UNC researchers will not share your individual responses in their report to us. Furthermore, you can be assured that your identity will not be revealed to anyone else in any way.

You'll have about a two-week window to complete the questionnaire, but I urge you to complete it as soon as your unique business situation permits. We hope to have the completed questionnaires returned no later than March 10, 1999. Thanks in advance for your candid responses.

John Doe Brown
Sales Manager

John Doe Smith
Information Manager

Printed on Study 2 Host Company Letterhead Paper

SURVEY COVER LETTER for Questionnaire # 1

To: Sales Representatives
Customer Category Managers
Customer Business Team Leaders
Sales Staff

Date: March 1, 1999

From: John Doe Brown, Sales Manager
John Doe Smith, Information Manager

Subject: 2nd Study Host Company Name / UNC SALES TECHNOLOGY SURVEY

A few days ago we sent you a message alerting you to a pair of questionnaires that you would receive concerning your opinions about sales technology. The first questionnaire is enclosed.

Your open and honest responses to the questionnaire will give us a better understanding of your needs and help identify ways to improve our sales technology efforts. The survey will also provide us with benchmarks within our sales organization. The survey is designed primarily for sales personnel with customer responsibility. However, we would like team leaders and everyone receiving this survey to complete it using your sales experience as a basis for response.

Included is a pre-addressed envelope to use to return your completed questionnaire to the researchers we are working with at the University of North Carolina. They will treat your answers with complete confidentiality and their report will not identify any individual in any way.

Please return the completed questionnaire by March 10, 1999.

Thank you for your responses.

John Doe Brown
Sales Manager

John Doe Smith
Information Manager

The Kenan-Flagler Business School
The University of North Carolina
at Chapel Hill
Campus Box 3490, McColl Building
Chapel Hill, NC 27599-3490 USA

KENAN-FLAGLER
BUSINESS SCHOOL
UNC-CHAPEL HILL

SALES TECHNOLOGY SURVEY

QUESTIONNAIRE # 1 of 2

The purpose of this study is to get your expert opinions concerning your use of sales technologies. *This is not a "test." There is no correct answer to any question.* This is the first of two questionnaire that you will receive related to this study. The second will follow in about 10 days.

What we want and your management needs is your frank judgement. Please read each question carefully and decide how you feel about it. Even if you are not certain *about the exact answer to a question*, please circle the response that best matches your opinion and go on to the next question. Don't worry or puzzle over individual questions. Work quickly and record your immediate thoughts. Some of the questions may seem similar to you or may not be worded exactly the way you would like them to be. Even so, give your best answer and continue working through the questionnaire. It is important that you answer all the questions. Your approximate answer is far more useful than an incomplete response.

The survey should take about 15 minutes to complete.

Please complete the questionnaire and return it in the pre-addressed envelope as soon as possible and before March 10, 1999.

We will use the number marked on the questionnaire to check off completed surveys. However, your individual responses will be kept strictly confidential to the researchers. The report to your company will be based on aggregate responses and no individuals will be identified.

Thanks, again, in advance for your time and effort in providing input to this important study.

Gary K. Hunter
Project Director

William D. Perreault, Jr.
Kenan Professor of Business

Survey Control # _____

Please indicate the extent to which you rely on each of the following sales technologies in your sales job.

		Not at All						*Very Heavily*
Information technology equipment:								
1.	Mobile telephone	1	2	3	4	5	6	7
2.	Voice mail or telephone answering machine	1	2	3	4	5	6	7
3.	Pager	1	2	3	4	5	6	7
4.	Facsimile machine	1	2	3	4	5	6	7
5.	Electronic mail	1	2	3	4	5	6	7
6.	Personal digital assistant	1	2	3	4	5	6	7
7.	Video tapes	1	2	3	4	5	6	7
8.	Computer	1	2	3	4	5	6	7
9.	Dial-in-modem	1	2	3	4	5	6	7
10.	Document scanner	1	2	3	4	5	6	7
11.	CD ROM	1	2	3	4	5	6	7
12.	Teleconferencing	1	2	3	4	5	6	7
13.	Video-conferencing	1	2	3	4	5	6	7
14.	Camera (video, still, digital)	1	2	3	4	5	6	7
15.	Computer-based sales presentations	1	2	3	4	5	6	7
Computer software for:								
16.	word processing	1	2	3	4	5	6	7
17.	spreadsheet analysis	1	2	3	4	5	6	7
18.	presentations (e.g., PowerPoint)	1	2	3	4	5	6	7
19.	accessing on-line data	1	2	3	4	5	6	7
20.	forecasting sales	1	2	3	4	5	6	7
21.	managing promotion funds / deals	1	2	3	4	5	6	7
22.	designing retail shelf space	1	2	3	4	5	6	7
23.	time management	1	2	3	4	5	6	7
24.	customer profile / contact management	1	2	3	4	5	6	7
25.	order entry	1	2	3	4	5	6	7
26.	order status	1	2	3	4	5	6	7
27.	call reporting	1	2	3	4	5	6	7
28.	panel data (Nielsen)	1	2	3	4	5	6	7
29.	scanner data (Nielsen / information desktop)	1	2	3	4	5	6	7
Information from:								
30.	reports prepared by other people in *your firm*	1	2	3	4	5	6	7
31.	*your firm's* on-line databases	1	2	3	4	5	6	7
32.	other sources within *your firm*	1	2	3	4	5	6	7
33.	reports prepared by people from *your customer's firm(s)*	1	2	3	4	5	6	7
34.	*your customer's* on-line databases	1	2	3	4	5	6	7
35.	other sources from your *customer's firm(s)*	1	2	3	4	5	6	7
36.	the internet (e.g., account or competitors' web pages)	1	2	3	4	5	6	7

When we refer to sales technology in this questionnaire, you should think about information technology hardware and software applications (such as listed above) that can be used to support sales.

1

On each of the following items, please rate how well you have performed relative to an average salesperson in similar selling situations.

	Needs Improvement						*Outstanding*
1. Working with customers to help them improve their profitability.	1	2	3	4	5	6	7
2. Producing accurate and complete records related to orders, expenses, and other routine reports.	1	2	3	4	5	6	7
3. Building your customer's business with your products.	1	2	3	4	5	6	7
4. Quickly generating new sales of new company products.	1	2	3	4	5	6	7
5. Completing administrative requirements efficiently.	1	2	3	4	5	6	7
6. Submitting required reports on time.	1	2	3	4	5	6	7
7. Listening attentively to identify and understand the real concerns of your customers.	1	2	3	4	5	6	7
8. Operating within the budgets set by the company.	1	2	3	4	5	6	7
9. Addressing my administrative responsibilities in a timely manner.	1	2	3	4	5	6	7
10. Contributing to your company's acquiring a good market share.	1	2	3	4	5	6	7
11. Convincing customers that I understand their unique problems and concerns.	1	2	3	4	5	6	7
12. Communicating your own sales presentation clearly and concisely.	1	2	3	4	5	6	7
13. Working out solutions to a customer's questions or objections.	1	2	3	4	5	6	7
14. Working with buyers to develop a partnership that's profitable to both firms.	1	2	3	4	5	6	7
15. Getting required "paperwork" done.	1	2	3	4	5	6	7

To help us to understand more about you and your responsibilities, please answer the following questions to the best of your ability. This section is concerned with your opinions about your current sales responsibilities.

	Strongly Disagree						*Strongly Agree*
1. I'm an advocate for my customer when it comes to getting things done within my firm.	1	2	3	4	5	6	7
2. I'm good at finding opportunities that benefit both my firm and my customer's.	1	2	3	4	5	6	7
3. Sales technology training in this firm is effective.	1	2	3	4	5	6	7
4. My peers rarely look to me for market expertise.	1	2	3	4	5	6	7
5. I try to solve customer problems in ways that also help my firm.	1	2	3	4	5	6	7
6. Compared to other salespeople, I'm not the most knowledgeable resource on our markets.	1	2	3	4	5	6	7
7. Staying abreast of changes helps me keep my buyers informed.	1	2	3	4	5	6	7
8. I often have to push programs that are not in the customer's best interests.	1	2	3	4	5	6	7
9. I get others in my company to do what my buyers want.	1	2	3	4	5	6	7
10. I look for good ways to integrate my customer's goals with my company's needs.	1	2	3	4	5	6	7
11. When necessary, I get others in my firm to work with their counterparts in my buyer's firm.	1	2	3	4	5	6	7
12. I often help my associates with their sales strategies and tactics.	1	2	3	4	5	6	7
13. When it comes to sales technology, I need better training.	1	2	3	4	5	6	7
14. I keep my buyers aware of market changes.	1	2	3	4	5	6	7
15. My sales technology training has been "world class."	1	2	3	4	5	6	7
16. I frequently meet our sales objectives in ways that may not help my account(s).	1	2	3	4	5	6	7
17. Training has helped me improve my sales technology skills.	1	2	3	4	5	6	7

This page is a continuation of the previous section.

	Strongly Disagree						Strongly Agree
18. I carefully evaluate the likely benefits and costs to the account of my proposals.	1	2	3	4	5	6	7
19. The training I've had on sales technology tools is not adequate.	1	2	3	4	5	6	7
20. I rarely deal with others in my firm to get things finished for my customer.	1	2	3	4	5	6	7
21. This firm needs to revamp its sales technology training programs.	1	2	3	4	5	6	7
22. I'm often unable to reconcile my buyer's concerns with my company's goals.	1	2	3	4	5	6	7
23. I try to develop plans that will be successful for the customer.	1	2	3	4	5	6	7
24. Others in my firm look to me for expert advice.	1	2	3	4	5	6	7
25. I coordinate activities between my firm's employees and my account(s).	1	2	3	4	5	6	7
26. Without me as their advocate within my firm, my customers would be at a loss.	1	2	3	4	5	6	7
27. I'm not very good at sharing knowledge with others on how they should deal with their accounts.	1	2	3	4	5	6	7
28. I come up with ideas that are winners for my firm, the buyer, and final consumers.	1	2	3	4	5	6	7
29. There's little need to coordinate activities between my firm and my account(s).	1	2	3	4	5	6	7
30. I decide what to recommend based solely on the benefits to my firm.	1	2	3	4	5	6	7
31. Our non-sales associates look to other salespeople for consultation about our customers.	1	2	3	4	5	6	7
32. I have had effective training on sales technology tools.	1	2	3	4	5	6	7
33. I frequently inform others about our markets.	1	2	3	4	5	6	7
34. I push others in my firm to meet my buyer's needs.	1	2	3	4	5	6	7
35. I work to ensure that my firm's logistics meet our customer's needs.	1	2	3	4	5	6	7
36. Compared to others in sales, I'm technology oriented.	1	2	3	4	5	6	7
37. My company adequately equips me with technology tools.	1	2	3	4	5	6	7
38. I'm very good at using information to help sell sales programs.	1	2	3	4	5	6	7
39. I use more sales technology than my job mandates.	1	2	3	4	5	6	7
40. If my job didn't force me, then I certainly wouldn't use sales technology.	1	2	3	4	5	6	7
41. I avoid using the computer unless I have to.	1	2	3	4	5	6	7
42. My company adequately trains me on the use of sales technology.	1	2	3	4	5	6	7
43. I extensively use information technologies to perform my job.	1	2	3	4	5	6	7
44. I rarely use information technologies in my current sales job.	1	2	3	4	5	6	7
45. My firm doesn't give me the support I need to effectively use sales technologies.	1	2	3	4	5	6	7
46. Sales technology is not one of my key strengths.	1	2	3	4	5	6	7
47. This firm needs to give me more help with technology than I get.	1	2	3	4	5	6	7
48. My company supplies all technologies that I need to perform my sales job.	1	2	3	4	5	6	7
49. I'm better in many other areas than I am in sales technology.	1	2	3	4	5	6	7
50. I need more help with technology than I get.	1	2	3	4	5	6	7
51. This company doesn't help when I have problems with sales technologies.	1	2	3	4	5	6	7
52. I try to link different sales technologies so that they work together well.	1	2	3	4	5	6	7
53. I can't keep up with all the changes in technology.	1	2	3	4	5	6	7

The statements below describe a number of different activities. Please indicate what percent of the time the activity is characteristic of your sales calls by circling one of the responses provided by each statement.

Before making a sales call…	Never	20%	40%	60%	80%	Always
1. I plan my presentation to respond to objections I anticipate from the buyer.	1	2	3	4	5	6
2. I evaluate the specific information needs of the buyer I will be meeting.	1	2	3	4	5	6
3. I collect information which will forewarn me of possible problems with the account.	1	2	3	4	5	6
4. I reconstruct the details of the last call on the account.	1	2	3	4	5	6
5. I consciously try to anticipate the events which are likely to occur in the call.	1	2	3	4	5	6
6. I try to determine which of my products will have the most success at that account.	1	2	3	4	5	6
7. I evaluate whether the time I will spend on a particular product or category is justified relative to my objectives.	1	2	3	4	5	6

For each of the following statements, please indicate how accurately it describes the buyers that you deal with.

The buyers that I deal with:	*Strongly Disagree*						Strongly *Agree*
1. see value in using information technology to improve decisions	1	2	3	4	5	6	7
2. are annoyed by technology	1	2	3	4	5	6	7
3. encourage me to support my proposal with data	1	2	3	4	5	6	7
4. don't expect me to use technology	1	2	3	4	5	6	7
5. can't be satisfied unless I rely on information technology	1	2	3	4	5	6	7
6. are much more interested in personal relationships than data	1	2	3	4	5	6	7
7. use information technology and expect me to	1	2	3	4	5	6	7

Please check or indicate your answers to the following items of general information.

1. On average, approximately how many hours per week do you spend:
   in total, working in your sales job. _____ hours
   interacting directly with customers. _____ hours
   doing administrative reports. _____ hours
   analyzing data related to your accounts. _____ hours
2. Have you received an annual performance evaluation at (name of host company)? [ ]No [ ] Yes
   If yes, what was your last performance rating at (name of host company)? _____
3. What is your age? _____ years Your gender? [ ] Male [ ] Female
4. How many years of experience do you have at (host company) and with other companies? ____ years

If you have any questions concerning this survey, please contact Gary Hunter at (919) 419-0547. Upon completion, please return the survey in the enclosed pre-addressed envelope to:
Gary K. Hunter, Sales Technology Study, The University of North Carolina, Kenan-Flagler Business School, Campus Box 3490-McColl Building, Chapel Hill, NC 27599-3490.

Thank you very much for your participation in this important study!

4

APPENDIX 2B—STUDY 2 HOST COMPANY COVER LETTER, UNC KENAN-FLAGLER BUSINESS SCHOOL INSTRUCTION LETTER, AND QUESTIONNAIRE 2

Printed on Study 2 Host Company Letterhead Paper with Company Logo

SURVEY COVER LETTER for Questionnaire # 2

To: Sales Representatives
Customer Category Managers
Customer Business Team Leaders
Sales Staff
Date: March 10, 1999
From: John Doe Brown, Sales Manager
John Doe Smith, Information Manager

Subject: 2nd Study Company Name / UNC SALES TECHNOLOGY SURVEY

A few weeks ago we sent you a message alerting you to a pair of questionnaires that you would receive concerning your opinions about sales technology. You should have received the first questionnaire about a week ago. The second questionnaire is enclosed. If you have not yet completed the first questionnaire and returned it to the researchers at UNC, please do so at your earliest convenience. It's important that you complete both questionnaires. If you have not received the first questionnaire, please follow the instructions enclosed to contact the researchers at UNC as soon as possible.

We remind you that your open and honest responses to the questionnaire will give us a better understanding of your needs and help identify ways to improve our sales technology efforts.

Included is a pre-addressed envelope to use to return your completed questionnaire to the researchers we are working with at the University of North Carolina. Again, they will treat your answers with complete confidentiality and their report will not identify any individual in any way.

Please return the completed questionnaire by March 20, 1999. Thanks again for your responses.

John Doe Brown
Sales Manager

John Doe Smith
Information Manager

The Kenan-Flagler Business School
The University of North Carolina
at Chapel Hill
Campus Box 3490, McColl Building
Chapel Hill, NC 27599-3490 USA

KENAN-FLAGLER
BUSINESS SCHOOL
UNC-CHAPEL HILL

SALES TECHNOLOGY SURVEY

QUESTIONNAIRE # 2 of 2

The purpose of this study is to get your expert opinions concerning your use of sales technologies. *This is not a "test." There is no correct answer to any question.* This is the second of two questionnaires that you will receive related to this study. If you have not already completed and returned the first questionnaire, please do so as this time. Your input from both questionnaires is critical to the study's success. If for some reason you have not received the first questionnaire, please contact the study's Project Director at UNC, Gary Hunter, at (919) 419-0547 as soon as you can.

What we want and your management needs is your frank judgement. Please read each question carefully and decide how you feel about it. Even if you are not certain about the exact answer to a question, please circle the response that best matches your opinion and go on to the next question. Don't worry or puzzle over individual questions. Work quickly and record your immediate thoughts. Some of the questions may seem similar to you or may not be worded exactly the way you would like them to be. Even so, give your best answer and continue working through the questionnaire. It is important that you answer all the questions. Your approximate answer is far more useful than an incomplete response.

The survey should take about 10 minutes to complete.

Please complete the questionnaire and return it in the pre-addressed envelope as soon as possible and before March 20, 1999.

We will use the number marked on the questionnaire to check off completed surveys. However, your individual responses will be kept strictly confidential to the researchers. The report to your company will be based on aggregate responses and no individuals will be identified.

Thanks in advance for your time and effort in providing input to this important study

Gary K. Hunter
Project Director

William D. Perreault, Jr.
Kenan Professor of Business

When we refer to sales technology in this questionnaire, you should think about information technology hardware and software applications (such as the computer, fax machine, mobile phone, Nielsen data applications, spreadsheets, modems, computer-based presentations, fund management software, order status software, information from databases, etc.) that can be used to support sales.

Survey Control # _____

Please indicate how effective each of the following types of information are for earning commitment from your buyers.

Information from or about:	*Totally Ineffective*						*Extremely Effective*
1. test marketing results	1	2	3	4	5	6	7
2. data collected in retail stores	1	2	3	4	5	6	7
3. past shipments to the buyer's firm	1	2	3	4	5	6	7
4. your customer's distribution costs	1	2	3	4	5	6	7
5. your firm's customer service statistics	1	2	3	4	5	6	7
6. your firm's distribution costs	1	2	3	4	5	6	7
7. consumer buying habits for the brand or category	1	2	3	4	5	6	7
8. demographic characteristics of your customer's market	1	2	3	4	5	6	7
9. your firm's marketing effectiveness	1	2	3	4	5	6	7
10. competitors' marketing effectiveness	1	2	3	4	5	6	7
11. your firm's advertising plans	1	2	3	4	5	6	7
12. performance differences among products	1	2	3	4	5	6	7
13. product demonstrations done in person	1	2	3	4	5	6	7
14. product demonstrations done via media	1	2	3	4	5	6	7
15. product profitability and sales volume	1	2	3	4	5	6	7
16. marketing results from areas not served by your customer	1	2	3	4	5	6	7

How useful to you is each of the following types of training when you are *initially* learning about a new technology that is intended to support your sales efforts?

	Totally Ineffective						*Extremely Effective*
1. self-paced computerized tutorials	1	2	3	4	5	6	7
2. video-training tapes	1	2	3	4	5	6	7
3. self-study using printed materials	1	2	3	4	5	6	7
4. training by your manager or supervisor	1	2	3	4	5	6	7
5. Q&A sessions with a knowledgeable peer	1	2	3	4	5	6	7
6. lecture-style presentations	1	2	3	4	5	6	7
7. "learn-as-you-use" approach	1	2	3	4	5	6	7
8. on-line help systems	1	2	3	4	5	6	7
9. one-on-one training with an expert	1	2	3	4	5	6	7
10. a workshop with "hands-on" instruction	1	2	3	4	5	6	7

When you run into a problem while you are using computer software to support your sales effort, how effective is each of the following types of support?

	Totally Ineffective						*Extremely Effective*
1. software help screens (i.e., not printed)	1	2	3	4	5	6	7
2. printed reference materials	1	2	3	4	5	6	7
3. hot-line telephone calls to company technical support group	1	2	3	4	5	6	7
4. telephone calls to external technical support group	1	2	3	4	5	6	7
5. advice from expert colleagues	1	2	3	4	5	6	7
6. electronic bulletin boards or online services	1	2	3	4	5	6	7

For each of the three possible uses of sales technology identified below, there are several rating scales. Each scale consists of a pair of phrases and numbers between them. Please rate yourself on each scale by circling the number that corresponds to your level of usage.

1. Compared to other salespeople, ***my use of sales technology to ACCESS*** information about products, sales calls, orders, sales, accounts, and the like is best described as …

frequent	1	2	3	4	5	6	7	infrequent
not expert	1	2	3	4	5	6	7	expert
a major emphasis	1	2	3	4	5	6	7	not an emphasis
routine	1	2	3	4	5	6	7	sporadic
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative
involuntary	1	2	3	4	5	6	7	voluntary

2. Compared to other sales people, ***my use of sales technology to ANALYZE and BETTER UNDERSTAND*** information about sales, profits, and costs for different products, categories, time periods, market areas and the like is best described as …

frequent	1	2	3	4	5	6	7	infrequent
not expert	1	2	3	4	5	6	7	expert
a major emphasis	1	2	3	4	5	6	7	not an emphasis
routine	1	2	3	4	5	6	7	sporadic
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative
involuntary	1	2	3	4	5	6	7	voluntary

3. Compared to other sales people, ***my use of sales technology to COMMUNICATE*** with other people inside and outside of the firm is best described as …

frequent	1	2	3	4	5	6	7	infrequent
not expert	1	2	3	4	5	6	7	expert
a major emphasis	1	2	3	4	5	6	7	not an emphasis
routine	1	2	3	4	5	6	7	sporadic
hesitant	1	2	3	4	5	6	7	confident
creative	1	2	3	4	5	6	7	not creative
involuntary	1	2	3	4	5	6	7	voluntary

Please check or indicate your answers to the following items of general information.

1. In a typical month, with approximately how many different individuals do you communicate (both in person or otherwise) …at customer accounts _____ … inside your own company _____
2. Are you a member of a sales team? [ ]No [ ] Yes _____ number of people on team
3. Are your sales efforts devoted to the needs of a single account? [ ]No [ ] Yes
4. In dollars, what is your annual gross salary? _____ Your annual bonus income? _____

If you have any questions concerning this survey, please contact Gary Hunter at (919) 419-0547. Upon completion, please return the survey in the enclosed pre-addressed envelope to:

Gary K. Hunter, Sales Technology Study, The University of North Carolina, Kenan-Flagler Business School, Campus Box 3490-McColl Building, Chapel Hill, NC 27599-3490.

Thank you very much for your participation in this important study!

2

APPENDIX 2C—FOLLOW UP LETTERS TO PARTICIPANTS FOR WHOM WE WERE MISSING EITHER ONE OR BOTH QUESTIONNAIRE RESPONSES

The Kenan-Flagler Business School
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Campus Box 3490, McColl Building
Chapel Hill, NC 27599-3490 USA

KENAN-FLAGLER
UNC-CHAPEL HILL

Follow Up Form Letter for Participants Who Did Not Return One of the Two Questionnaires

SALES TECHNOLOGY SURVEY, FOLLOW UP QUESTIONNAIRES

Study 2 Participant's Full Name
Participant Address
City, State Zip
Date: April 5, 1999

Dear First Name of Study 2 Participant:

While we are grateful for your response on one of the questionnaires, we need your perspectives on the enclosed questionnaire. Your participation will improve the study's findings by providing a more complete assessment of (name of Study 2 host firm)'s current sales technology practices. For your convenience, we have enclosed a stamped and addressed return envelope along with another copy of the questionnaire. Upon receipt of your response, the research team will check your name off our list for continued mailings of the questionnaire.

Again, the purpose of this study is to get your expert opinions concerning your use of sales technologies. *This is not a "test." There is no correct answer to any question.* Your input from both questionnaires is critical to the study's success.

What we want and your management needs is your frank judgement. Please read each question carefully and decide how you feel about it. Even if you are not certain about the exact answer to a question, please circle the response that best matches your opinion and go on to the next question. Don't worry or puzzle over individual questions. Work quickly and record your immediate thoughts. Some of the questions may seem similar to you or may not be worded exactly the way you would like them to be. Even so, give your best answer and continue working through the questionnaire. It is important that you answer all the questions. Your approximate answer is far more useful than an incomplete response.

Please complete the questionnaire and return it in the pre-addressed envelope as soon as possible and before April 15, 1999.

We will use the number marked on the questionnaire to check off completed surveys. However, your individual responses will be kept strictly confidential to the researchers. The report to your company will be based on aggregate responses and no individuals will be identified.
Thanks in advance for your time and effort in providing input to this important study.

Gary K. Hunter
Project Director

William D. Perreault, Jr.
Kenan Professor of Business

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Follow Up Letter for Participants Who Did Not Return Either Of the Two Questionnaires

SALES TECHNOLOGY SURVEY, FOLLOW UP QUESTIONNAIRES

Study 2 Participant's First Name
Participant Address
City, State Zip

Date: April 5, 1999

Dear First Name of Study 2 Participant:

We need your perspectives on the enclosed questionnaires to better understand sales and information technology at (name of Study 2 host firm). Your participation will improve the study's findings by providing a more complete assessment of (name of Study 2 host firm)'s current sales technology practices. For your convenience, we have enclosed a stamped and addressed return envelope along with another copy of the questionnaires. Upon receipt of your response, the research team will check your name off our list for continued mailings of the questionnaire.

Again, the purpose of this study is to get your expert opinions concerning your use of sales technologies. *This is not a "test." There is no correct answer to any question.* Your input from both questionnaires is critical to the study's success.

What we want and your management needs is your frank judgement. Please read each question carefully and decide how you feel about it. Even if you are not certain about the exact answer to a question, please circle the response that best matches your opinion and go on to the next question. Don't worry or puzzle over individual questions. Work quickly and record your immediate thoughts. Some of the questions may seem similar to you or may not be worded exactly the way you would like them to be. Even so, give your best answer and continue working through the questionnaire. It is important that you answer all the questions. Your approximate answer is far more useful than an incomplete response.

Please complete the questionnaire and return it in the pre-addressed envelope as soon as possible and before April 15, 1999.

We will use the number marked on the questionnaire to check off completed surveys. However, your individual responses will be kept strictly confidential to the researchers. The report to your company will be based on aggregate responses and no individuals will be identified.
Thanks in advance for your time and effort in providing input to this important study.

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