Digitization of Selling Activity and Sales Force Performance: An Empirical Investigation

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Firms are creating a digitized selling capability by developing Web sites designed to provide information and conduct transactions with customers, replacing many routine sales force activities. The authors use the motivation-ability framework to shape a conceptual model that examines the effects of the digitization of selling activity on two salesperson outcomes: salesperson effectiveness and salesperson job insecurity. Using data from salespeople in 168 firms, they assess the moderating effects of environmental-level motivational factors and firm-level ability factors on the impact of digitization of selling activity on salesperson effectiveness and job insecurity. The results reveal that digitization has the paradoxical effect of improving salesperson effectiveness and heightening job insecurity concerns, and also that managers can improve the technology-enabled multichannel capabilities of the firm by giving priority attention to human capital improvement, sales force control systems, and communication of the digitization strategy.

Keywords: *digitization of selling capabilities; sales force performance; sales force controls; job insecurity; technology-enabled multichannel capability*

The TaylorMade Company, a marketer of golf equipment, increased the productivity of its sales representatives 25 percent by implementing a handheld wireless active inventory system to take the inventory of retail stores automatically, allowing salespersons more time to focus on helping retailers increase sales (Green 2003). The Vanguard Group offers an integrated Web interface that is accessible to both its customers and its sales force. Customers use it to open new accounts, purchase and redeem fund shares, and gain access to account performance. The sales force is then freed up to devote time to higher value interactions. As Vanguard CEO Brennan points out, "There's a benefit for everybody if the routine stuff happens on the Web and the value-added happens with human effort accentuated by the Web." Vanguard's Web customers tend to invest 150 percent more than non-Web customers, and the cost to serve them is just 5 percent of what it costs with a human interface (Dragoon 2003). Web sites designed to communicate and conduct transactions directly with customers have yielded substantial transaction-cost savings and have improved customer value delivery among firms that had previously sold exclusively via a sales force channel. The implementation of technology-enabled Web-based channels is part of an ongoing effort to shift firm capabilities from human capital to technology. Technology has become a vehicle by which the firm integrates within its infrastructure capabilities such as human resource management, accounting and finance, logistics, communication, and marketing channels, which are performed by human capital. In developing a Web site to conduct transactions with its customers, the firm is institutionalizing its selling capabilities within its infrastructure. We refer to the creation of a technology-based capability to perform activities previously performed by human capital

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as the *digitization of firm capability*. The digitization of capabilities reduces the firm's exposure to risks associated with voluntary turnover of human capital and eliminates location, distance, and temporal constraints on its relationship with stakeholders (Watson, Berthon, Pitt, and Zinkhan 2000).

Presently, the trend is to integrate a Web-based selling capability with other channels, such as a sales force or call center, in order to create a coordinated multiple touchpoint system. This integration delivers productivity gains by transferring routine activities such as order taking to the Web site, leaving salespersons more time to engage in strategic selling. Although such channel integration can yield substantial benefits, the managerial challenges are formidable. Anecdotal evidence indicates that salespersons often feel ambivalent toward the implementation of a Web-based channel. On one hand, salespersons may become apprehensive if they view the Web-based channel as competitive with, rather than complementary to, their pursuits. The direct firm-customer interaction of a Web-based channel potentially undermines the salesperson's symbolic role as the vanguard of the firm-customer relationship. In this sense, it is unsurprising, therefore, that salespersons within large network marketing firms such as Avon, Mary Kay, and Tupperware have demonstrated considerable resistance to the implementation of independent Web-based channels. And consequently, these firms have been careful not to breach the trust of their salespersons in pursuing the benefits of e-business. Invariably, salespersons may regard the transaction-cost savings associated with a Web site as a diversion of potential commission remuneration to the sales force. Some individuals may resist technology when it does not play to their strengths (Speier and Venkatesh 2002). On the other hand, salespersons may also view the advent of a Web-based channel as an opportunity to spend less time engaged in routine administrative tasks and more time performing such intellectually challenging activities as customer analysis, consultative selling, and team selling, which hold promising prospects for career advancement. Even though e-business can considerably increase salespersons' effectiveness, it also has the potential to generate considerable job insecurity among them.

The purpose of this article is to examine the impact of digitizing a firm's selling capability on the sales force. We accomplish this by pursuing two objectives. First, we conceptualize *digitization of selling activity* and empirically assess its implications for two sales force outcomes: salesperson effectiveness and salesperson job insecurity. We focus on salesperson effectiveness and job insecurity as representative indicators of salesperson ambivalence toward digitization. Although the early phase of e-business implementation was characterized by discrete disintermediation of channel layers, the selective digitization of selling functions and the integration of multiple channels have now become the norm. Research on the cross-channel effects of digitization is therefore timely. In conceptualizing digitization of selling activity, we seek to shift the focus from e-business implementation as a disintermediating force to a capability-creating force.

The second objective of the present article is an empirical assessment of the effectiveness of implementation strategies intended to motivate and encourage salespersons to function in an e-business environment. We rely on the *motivation-ability framework* (Merton 1957) and on empirical observation to guide our choice of moderating implementation strategies. Specifically, we examine salespersons' motivations to embrace change, namely, customer-initiated change and competitor imitation, and the strategies used to enable change, namely, investment in human capital, and sales force control systems (behavior-based and outcome-based) in managing the impact of digitization on salesperson effectiveness and job insecurity. Firms have proceeded rapidly with the implementation of Web-based channels through a largely mimetic process. Managers often lack a clear understanding ex ante of the degree to which customers will realize value from using the Web site. Given the tendency of firms to "mindlessly imitate" competitors when confronted by normative pressures (DiMaggio and Powell 1983), it is appropriate to assess the effectiveness of e-business implementation strategies.

Although researchers have begun to address multichannel issues such as in-house sales force vis-à-vis external sales agents (Anderson and Weitz 1989; Dutta, Bergen, Heide, and John 1995; Weiss and Anderson 1992), research on the implementation and management of multiple channels has lagged considerably behind industry developments (Frazier 1999). Researchers have highlighted the need for such strategy implementation research on Web-based channels (Varadarajan and Yadav 2002). Recent studies have examined salesperson characteristics (Jones, Sundaram, and Chin 2002; Speier and Venkatesh 2002) and the organizational antecedents (Erffmeyer and Johnson 2001) of the adoption of sales force automation tools. However, no studies have examined the impact of Web-based channels on the sales force.

The remainder of this article is organized as follows. First, we develop the concept of digitization of selling activity. Second, we present a conceptual framework and discuss the key constructs and hypotheses to be tested. We then describe the research methodology, report the study findings, and outline its implications. We conclude by identifying limitations of the study and suggesting avenues for further research on digitization and the sales force.

Digitization of Selling Activity

The digitization of firm capability is the creation of a technology-based capability that allows stakeholders to

interact with the firm in a self-directed manner without the intervention of employees. Digitization may involve the complete transfer of business processes or varying degrees of integration of technology and human capital. The creation of technology-based capabilities provides the blueprint for the firm's further growth and expansion (Kogut and Zander 1992). Digitized capabilities have a virtual capacity since growth becomes a matter of replicating or scaling the supporting technology to match market demand.

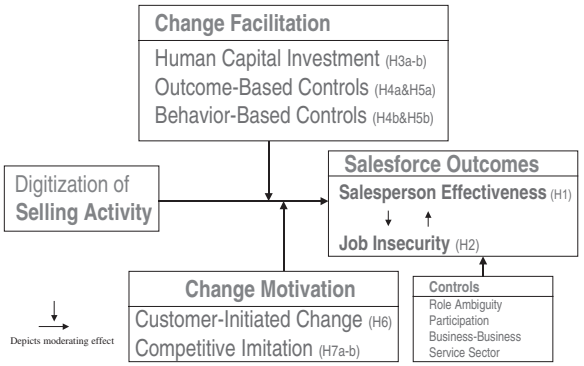
The present study focuses specifically on the digitization of selling activities, involving the implementation of a Web-based channel by firms with an incumbent sales force. We operationalize the *digitization of selling activity as a selling organization's capability to have customers perform buying activities in a self-directed manner using a Web site without the involvement of a salesperson*.[1] Customers can undertake activities to varying degrees via a Web site, according to the scope of activities digitized and the degree of digitization. Insights from our field interviews and the literature (e.g., Churchill, Ford, Walker, Johnston, and Tanner 2000) indicate that three broad areas of selling activities are being digitized: *providing product/service information, purchase transaction and account maintenance, and customer service and recovery.* Providing product/service information entails the capability for customers to access product/service information online without speaking to a salesperson. For example, customers can visit Hewlett Packard's Web site and find information on the configurations of products such as desktops and printers. Purchase transaction entails the facility for customers to select a product and make a payment without a salesperson's intervention. Account maintenance encompasses activities that support the ownership phase of the customer service lifecycle (Watson et al. 2000). Using a Web site, customers check account balances, examine product upgrades and supplements, and check delivery status. For example, at Dell's Premium Pages Web site, a customer can make a payment, check the status of an order, and access her purchase history. The Web site replaces much of the customer's purchasing and inventory management business process. Finally, customer service and recovery involve the capability to access software-based help facilities such as frequently asked questions (FAQs), expert systems, and request contact with service support personnel. For example, at Avon's Web site, an e-representative option provides access to tips on beauty aids and FAQs, as well as e-mail access to a representative.

This study is concerned with the implications of digitization for the sales force; consequently, we confine our examination of digitization to activities that salespersons are likely to perform exclusively. Product/service information is frequently made available to customers via call centers and printed material by sales support staff. Also, remote call centers or field service teams often perform customer service and recovery functions. *Purchase transaction* and *account maintenance*, however, remain core aspects of the salesperson job description. These activities are interdependent in that a purchase necessitates account maintenance, which leads to further purchases. Hence, we restrict our focus to the digitization of purchase transaction and account maintenance.

While the removal of these activities from the exclusive preserve of the salesperson has changed the salesperson's role significantly, digitization—like technologies before it such as electronic data interchange—has not necessarily diminished the salesperson's importance to the marketing function. Rather, the salesperson's role assumes a more strategic focus. Salespersons are performing fewer customer-firm information node activities in favor of such activities as strategic analysis of the customer industry for business development and consultative selling. For example, whereas customers would previously call their salespersons to check shipping schedule, inventory of previous shipments, or account balance, they can now check these using a Web site. This change allows the salesperson more time to function like a key account manager, forecasting customer industry growth and identifying selling opportunities associated with growth trajectories.

We draw theoretical inferences consistent with perspectives on grounded theory development (Glaser and Strauss 1967) from our observation of the implementation of Web sites to perform selling activities. Digitization involves two underlying subprocesses that determine the extent to which a salesperson is likely to be disintermediated from the channel. The first subprocess involves the *decomposition of activities into routines* amenable to automation. Web-based selling involves the standardization of aspects of exchange relationships such as communications, order taking, product/service delivery, and payment into routines. These activities must be redesigned from the perspective of the customer and be developed as interactive features of a Web site. The automation of organizational routines yields immediate benefits such as transaction-cost savings and reduced tediousness of salespersons' job tasks. Salespersons' routines are usually the first targets for digitization, which escalates into an ongoing effort to identify repetitive patterns in employee job tasks and develop technological capabilities to perform these tasks. Less routine diagnostic selling procedures are attempted using expert systems, collaborative filtering, and intelligent agents. From the standpoint of salespersons, although we recognize that the automation of routines has several benefits such as, for example, improving salespersons' ability to build relationships through instant access to customer information (Zinkhan 2002), the realization that an activity they have performed for many years can be totally performed by firm technology at a fraction of the cost must be disconcerting to them. Salespersons are likely to become somewhat suspicious and distrusting of a process

FIGURE 1
Digitization of Selling Activity and Sales Force Performance



that decomposes, automates, and in essence replicates their skills.

Complementary to the decomposition process is a second subprocess of *increasing complexity of the work environment*, which improves salespersons' career prospects. Digitized systems produce precise data and real time analysis, allowing salespersons to perform complex analysis and sales planning for each customer. The potential to generate detailed customer-centric reports from digitized systems sets the stage for salespersons to develop a new and perhaps more advanced set of tacit skills that preserve their ability to create value within the firm. The trade-off between these subprocesses accounts for employee ambivalence toward digitization. Given the importance of digitization as a vehicle for firm growth, it is essential that this ambivalence be managed successfully.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Figure 1 depicts the conceptual model to be tested. We employed a discovery-oriented approach to model development (Deshpande 1983), combining insights from depth interviews with the theoretical literatures on sales management, strategy implementation, and organizational change. The framework reflects our general thesis that in developing a digitized channel capability, managers need to reduce salesperson ambivalence and encourage integration of the new channel into the salesperson's job. The theoretical literature on sales force management identifies two general categories of salesperson outcomes: performance outcomes and psychosocial outcomes. Salesperson performance is assessed using a new salesperson effectiveness construct designed to detect improvements arising directly from channel integration. We examine job insecurity as a psychosocial outcome because management theorists regard it as a valuable indicator of employee stress during organizational change (Greenhalgh and Rosenblatt 1984). We categorize the moderating variables into change-handling ability and change motivation factors following Merton's (1957) *Motivation-Ability* framework. This framework has demonstrated applicability to several areas including consumer behavior (MacInnes, Moorman, and Jaworski 1991), marketing strategy (Boulding and Staelin 1995), and channels (Grewal, Comer, and Mehta 2001). The literature on strategy implementation highlights the usefulness of human capital investment in improving employees' ability to handle organizational change (Tushman, Newman, and Romanelli 1986). The sales force control literature identifies outcome-based and behavior-based controls as mechanisms for enabling the sales force to achieve targeted goals (Anderson and Oliver 1987). The need for employees to appreciate the rationale for strategic change has also been identified as a critical element of effective marketing strategy (Menon, Bharadwaj, Adidam, and Edison 1999). Thus, we examine salespersons' perceptions of customer-initiated change and competitive imitation as motivations to embrace digitization. Next, we develop hypotheses regarding the relationship outlined in the conceptual model.

Digitization and Sales Force Outcomes

Salesperson effectiveness. Researchers recommend that salesperson effectiveness be assessed using aspects of salesperson performance that are theoretically related to the focal research question and that result directly from salespersons' actions (e.g., Behrman and Perreault 1982). Digitization-related salesperson effectiveness refers to the behavioral productivity benefits a salesperson derives from implementing a Web-based channel. These benefits include an increase in the range of products carried, an increase in the time spent cross-selling products, an increase in the time spent targeting new customers, and an increase in the attention given to more profitable customers.

Transferring salesperson routines to automated technology increases the time salespersons have to engage in customer-centric selling efforts.[2] Customer centricity emphasizes understanding and satisfying the needs of individual customers rather than selling standardized products to market segments (Sheth, Sisodia, and Sharma 2000). This approach results in the customer getting a product that exactly meets his or her needs, increasing the likelihood of customer loyalty. Because the initial customized purchase specification is available to the customer via a Web site, repeated purchases require even less of salespersons' time. Hence, salespersons' efforts can be redirected

toward pitching higher margin products on subsequent selling opportunities, and customer profits targets can be met at lower levels of sales force investment.

Improvements in salesperson effectiveness may also result from customers becoming less demanding of salespersons because customers have conducted a prior information search using the firm's Web site. Web sites are an especially effective means for researching information. They allow customers to make complicated, attribute-based product comparisons easily among competing products. Web site interactivity increases the bidirectionality and richness of communication between customers and the firm, facilitating greater customer involvement in the product and service outcomes (Watson et al. 2000). Customers' buying process becomes more efficient because Web sites reduce the time and cost required to acquire information (Bakos 1997; Reibstein 2002). Consequently, salespersons spend less time providing descriptive and contextual information. For example, some of the stockbrokers we interviewed report that their conversations with customers who also use the online services had become increasingly centered on reactions to specific actions being contemplated; online customers tended to ask for opinions on financial products they were contemplating rather than merely ask the adviser to suggest products. Online customers also tend to be familiar with solutions suggested by salespersons, necessitating less explanation. Prospective car purchasers who visit Web sites before entering auto dealerships display similar behaviors (Sheth et al. 2000). These customers are likely to exhibit more clearly defined preferences due to their increased control from interacting with a Web site. Experimental research by Ariely (2000) demonstrates that the use of interactive communication to give customers control over information flow can improve customer memory and knowledge about the domain and can also help customers to match their preferences more accurately. These customers are therefore likely to require less time-consuming selling effort. Thus, digitization can improve salesperson effectiveness by making customers more amenable to efficient selling.

Hypothesis 1: The greater the digitization of selling activity, the greater the level of salesperson effectiveness.

Job insecurity. Job insecurity is the extent of fear of job loss. It may result from organizational changes that are perceived to reduce the need for employee skills, opportunities for promotion, job status, and flexibility of work schedule (Greenhalgh and Rosenblatt 1984). Feelings of job insecurity are associated with perceived powerlessness and lack of control over sources of threat, which together constitute a significant source of employee stress (Kuhnert, Sims, and Lahney 1989). Research indicates that job insecurity is a major precursor of intention to quit (e.g., Arnold and Feldman 1982).

Although we recognize that digitization can improve job security via the earlier mentioned benefits of automating tedious "grunt work" routines, improving salespersons' ability to maintain relationships, and indirectly via the improvements in salesperson effectiveness, we anticipate that the net effect of digitization is an increase in salesperson job insecurity, due to the widely documented potential of new technology to generate uncertainty among employees. As Barley (1986) put it, "An exogenous shock such as the arrival of new technology creates slippage between the institutional template and the exigencies of daily life" (p. 80). Stated differently: as the process of implementing technology advances, task demands change, job descriptions become fluid, and uncertainty increases. Technology implementation also disrupts the relative power of individuals within the organization. According to Tushman and Anderson (1986), technology implementation holds competence-enhancing and competence-destroying possibilities for employees, and each employee copes with technological change differently. Some become early adopters by aggressively learning the new technology, while others resist. Consequently, power and network centrality are redistributed from late adopters to early adopters, which generates uncertainty and ambiguity of role expectations (Burkhardt and Brass 1990).

Psychological contract theory also supports digitization's adverse effect on salesperson job insecurity. Management theorists regard job insecurity as an important indicator of the state of the psychological contract between employees and management as organizations evolve. The psychological contract refers to the implicit relationship and the mutual obligations and expectations between employers and employees (Rousseau 1995). It is now widely accepted that a new psychological contract exists, whereby obligations to employees and job security are subordinated to firm efficiency and profitability goals (Martin, Staines, and Pate 1998). The twin objectives of reducing transaction costs and increasing customer loyalty via improved customer value and institutionalization of customer relationships drive digitization. Cognizant of these considerations, salespersons may harbor skepticism and insecurity regarding management's commitment to employees when a Web-based channel is being implemented. In light of these arguments, we expect the following:

Hypothesis 2: The greater the digitization of selling activity, the greater the level of salesperson job insecurity.

MODERATORS OF THE EFFECT OF DIGITIZATION ON SALES FORCE OUTCOMES

Human Capital Investment

Our examination of human capital investment focuses on the education and training undertaken to prepare salespersons to function in a digitized environment. Training is viewed as one of the most persuasive methods for enhancing not only productivity of the employee but also for communicating organizational goals and strategies to personnel (Arthur, Bennett, Edens, and Bell 2003). Our interviews and the industry literature indicate that firms attempted to improve their salespersons' abilities to function in a multichannel environment by providing them with motivational, strategy-making, and technology-related education and training. Education and training improve the technical skills required to operate computerized technology and provide analytic, tactical, and strategy-making skills such as market segmentation and targeting required to function in an increasingly data-intensive environment with increased need for decision making at a granular level. Education and training should also familiarize salespersons with new business processes and product and service innovations that often accompany the implementation of new technology.

In addition, education and training should improve salespersons' firm-specific skills, which are idiosyncratic knowledge about a firm's interpersonal relationships or corporate culture. Firm-specific skills improve employees' ability to function effectively within the organization by exposing them to informal social networks, team dynamics, and the personality of managers (Coff 1997). Employees with strong firm-specific skills are better able to create competent cross-functional teams and secure resources to meet objectives in a timely manner. These skills are likely to be even more valuable in an integrated multichannel selling environment. Salespersons with good firm-specific skills are more effective at getting the selling organization to implement their process innovations.

Human capital investments should also reduce digitization-related salesperson job insecurity. Investments in employee education and training during periods of organizational change imply that managers are committed to honoring the psychological contract with employees (Rousseau 1995). Salespersons are likely to interpret education and training investments as a sign of intended job retention. In addition, it has been argued that education and training increase employees' willingness to accommodate inconveniences associated with organizational change (Meyer and Allen 1997). In light of these arguments, we expect the following:

Hypothesis 3a: The greater the investment in human capital, the higher the positive effect of digitization on salesperson effectiveness.

Hypothesis 3b: The greater the investment in human capital, the lower the adverse effect of digitization on salesperson job insecurity.

Sales Force Control Systems

Sales force control systems allow firms to align salespersons' behaviors and objectives with organizational goals. Theoretical work by Anderson and Oliver (1987) classifies sales force control systems as either behavior based, involving the ongoing monitoring of sales activities, or outcome based, involving the monitoring of objective outcomes. Behavior-based control systems monitor and reward salespersons according to such factors as personability, presentation quality, and citizenship behaviors, whereas outcome-based control systems reward salespersons according to how successfully they achieve sales and customer satisfaction. Behavior-based monitoring may lead to more effective channel integration by facilitating open communication between management and the sales force, reducing stress, improving the clarity of objectives, and speeding up the diffusion of team and individual learning through vertical communication. In addition, the integrative team spirit associated with behavior-based monitoring may also improve salesperson commitment to a new structure. Although these benefits of behavior-based monitoring represent essential contributions to successful channel integration, we contend that integrating a Web-based channel and an incumbent sales force involves certain complexities that require some degree of radical process innovation for which outcome-based monitoring is suited and behavior-based monitoring is counterproductive.

As we argued earlier, digitization makes the salesperson's role more intellectually challenging. To illustrate the demands of this environment, Iyar (1999:78) recounted the scenario of a customer browsing a Web site in search of information to inform a purchase decision. She is unsuccessful in locating suitable information, so she enters her name and telephone number to initiate a callback. A call center representative returns the call but is unable to provide a satisfactory response. A field sales representative is then invited to join the discussion. The representative demonstrates the product via a Web site and takes the customer on a tour of a competitor's Web site to demonstrate that their product is not comparable. Although the salesperson's primary responsibility may still be to close the sale, she now functions as part of a broader coordinated solution delivery system. Achieving this degree of channel integration requires salespersons to develop new capabilities and abandon some old routines.

Behavior-based control systems allow managers a great deal of control over the selling operation, since the sales manager has the latitude to impose his or her ideas of how salespersons should achieve results (Anderson and Oliver 1987). However, anecdotal evidence indicates that managers lacked a clear definitive core of informed expertise—at least in the early phases of e-business diffusion—on what customers require of a Web site (Burke 2002). Attempts at close supervision when expertise is lacking could prove frustrating and counterproductive. A more plausible alternative might be to have salespersons take a "doing while learning" approach involving experimentation and creativity (Nord and Tucker 1987). This kind of active experimentation produced much of the success of firms such as Amazon.com and Dell. However, experimentation can be costly and risky to individual salespersons, who may lose reputation when initiatives fail. Outcome-based control systems are effective in this regard because they allow individuals with different cognitive and creative abilities and risk-taking propensities to obtain the level of reward that motivates them to perform optimally. In complex situations, the commitment of cognitive effort becomes a critical differentiator of firm success. Behavior-based control systems are less effective in this regard. They encourage conformity to team objectives and discourage individual risk taking. Behavior-based control systems may also allow less competent salespersons a free ride and may elicit insufficient job commitment from talented salespersons. On the other hand, outcome-based control systems encourage each salesperson to become a point of experimentation, increasing the likelihood of early discovery of new multichannel selling techniques. Finally, outcome-based control systems create a market for competency within the selling organization, allowing talented salespersons to earn superior rents, recognition, and advancement (Becker 1975), potentially improving the quality of the selling organization's managerial leadership. Building from these arguments, we expect the following:

Hypothesis 4a: The greater the use of outcome-based control systems, the higher the positive effect of digitization on salesperson effectiveness.

Hypothesis 4b: The greater the use of behavior-based control systems, the lower the positive effect of digitization on salesperson effectiveness.

Regarding job insecurity, we anticipate that the use of outcome-based control systems during channel implementation will increase salesperson job insecurity, whereas the use of behavior-based control systems will have the opposite effect. This scenario is likely because outcome-based monitoring encourages an entrepreneurial individualistic mind-set among salespersons. Selling organizations with high levels of outcome-based controls tend to have less communication between salespersons and managers (Anderson and Oliver 1987). These salespersons are accustomed to having the freedom and independence to devise their own strategies for achieving sales targets and are more likely to focus on the cannibalistic prospects rather than the integrative prospects of a Web-based channel. This focus should increase the salience of job-related uncertainties in the mind of the salesperson and raise questions like, What aspects of my job are likely to be eliminated or enhanced? Given my skill set, what are my immediate prospects in a digitized environment?

In contrast, when high levels of behavior-based control systems are used, job-related uncertainties are likely to concern salespersons less. Behavior-based control systems consider a broader range of factors such as product knowledge, personability, presentation quality, closing ability, and citizenship behaviors than the narrow goal-oriented focus of outcome-based control systems. Consequently, a salesperson's motivation to view a digitized channel as competitive rather then complementary is likely to be substantially reduced. In addition, the assurance of a basic salary associated with behavior-based monitoring prevents the fear of losing present or future commission growth to a Web site. Finally, supervisory monitoring affords salespersons the opportunity to request clarification of job-related uncertainties. On the basis of these arguments, we expect the following:

Hypothesis 5a: The greater the use of outcome-based control systems, the higher the adverse effect of digitization on salesperson job insecurity.

Hypothesis 5b: The greater the use of behavior-based control systems, the lower the adverse effect of digitization on salesperson job insecurity.

Customer-Initiated Change

Customer-initiated change refers to change motivated by requests of current or prospective customers. Because competitive advantage is temporary, firms are challenged to detect early signs of change in customer behavior and to redirect resources toward innovations that meet new demands. Wu, Mahajan, and Balasubramanian (2003) reported that firms are being pressured to adopt features such as online order taking and order tracking by powerful customers seeking lower transaction costs. We expect that salesperson effectiveness will improve when they consider digitization to be customer initiated. As organizational boundary spanners, salespersons are responsible for detecting and disseminating customer information and are among the first to recognize changes in customer needs. Because customer-driven change is beyond the firm's locus of control (Folkes 1988), salespersons are more likely to accept digitization as a progressive reality and consequently are less likely to resist change. Also, essential

incremental competitive advantage can be gained in competitive markets by detecting and responding to customer requests (Wheelwright and Clark 1992). Research indicates that salespersons tend to be highly responsive and motivated by customer requests because these requests provide an early indication of evolving market conditions and insights on ways to improve customer value and satisfaction. For instance, Wang and Netemeyer (2002) found that salespersons are significantly more inclined to invest greater learning effort when customers present them with new and demanding conditions, such as technological advances. Also, in a study of the software industry, Li and Calantone (1998) found that the intensity of a firm's customer knowledge processes (customer information acquisition, interpretation, and integration) are directly linked to demands made by the firm's customers. Similarly, we expect that when salespersons detect customer-initiated requests for digitization, they will become more highly motivated and willing to learn and to integrate Web-based technology into their selling activities, resulting in increased sales force productivity.

We do not anticipate that customer-initiated change will affect digitization-related job insecurity. While customer-initiated change is a motivation for e-business implementation, it does not necessarily affect salespersons' perception that they are likely to be disintermediated. Consistent with this discussion, we advance the following hypothesis:

Hypothesis 6: The greater the level of customer-initiated change, the higher the positive effect of digitization on salesperson effectiveness.

Competitive Imitation

Firms improve their performance by benchmarking their organizational objectives, structure, and business processes to a competitor they consider to be the industry thought leader. Theory and conventional knowledge suggest conflicting predictions regarding the impact of competitor imitation on the relationship between digitization and salesperson effectiveness. On one hand, conventional knowledge suggests that benchmarking channel design and implementation to an experienced competitor will enhance effectiveness. Imitation may reduce uncertainty and yield a viable solution at limited expense (Cyert and March 1963). However, management theory on mimetic isomorphism—the achievement of conformity through imitation—argues that when firms are confronted by uncertainty, such as poorly understood technologies, they will undertake change by imitating other firms (DiMaggio and Powell 1983) and that when a particular course of action becomes accepted as the norm, firms are prone to follow it "without thinking" (March 1981; see Haveman 1993 for a discussion). This tendency toward "mindless imitation" is due largely to the engrossing nature of competitively oriented motivations. Managers consider their competitors' performance to be an important benchmark for evaluating their own performance. Research using the prisoner's dilemma has demonstrated the tendency of persons in marketing management positions to choose highly competitive options and to emphasize relative performance against competitors (e.g., Corfman and Lehmann 1994). Such an emphasis on competitive performance leads managers to sacrifice profits and to ignore organizational idiosyncrasies and operating procedures in the interest of achieving competitive benchmarks. For example, Armstrong and Collopy (1996) found in an experimental study that more than 40 percent of individuals were willing to sacrifice company profits in order to outperform the competition. These authors also found from a survey that firms that pursue competitor-oriented objectives were likely to experience lower levels of profitability compared with firms that pursue a profit-oriented objective. Consistent with this line of reasoning, we contend that the competitive imitation of Web-based channels may lead to implementation difficulties. For instance, an overambitious degree of digitization may result if customers of the focal firm are less "technology ready" than customers of the firm being imitated. These difficulties are especially plausible in light of the rapid pace at which many firms have implemented Web-based channels in response to high normative pressures for e-business implementation.

We also contend that managers' tendency to subordinate internal targets and operating procedures in the interest of achieving competitive benchmarks will increase salespersons' perceptions of job insecurity related to digitization. Implementation difficulties related to inappropriate competitive imitation are likely to generate conflict and ambiguity within the selling organization. In addition, salespersons are likely to become convinced that management is prepared to sacrifice jobs in order to meet competitive benchmarks. Thus, we expect the following:

Hypothesis 7a: The greater the level of competitive imitation, the lower the positive effect of digitization on salesperson effectiveness.

Hypothesis 7b: The greater the level of competitive imitation, the higher the adverse effect of digitization of selling activity on the salesperson job insecurity.

Controls

Previous research suggests that other variables need to be considered when examining the impact of digitization on salesperson effectiveness and job insecurity. Controlling for such variables provides a stronger test of our theoretical model. We include salesperson participation in strategy making as a control variable in considering the impact of digitization on salesperson effectiveness. Management researchers contend that employee participation

in decision making improves employee performance by creating formal procedures to voice opinions without fear of negative consequences. These exchanges lead to improved mutual understanding and task coordination between managers and employees. We also consider the effect of salesperson role ambiguity as a control variable in our test of the effect of digitization on job insecurity because salesperson ambiguity has been widely linked to such psychosocial outcomes as job satisfaction and intention to quit. Job insecurity is included as a control variable in examining the relationship between digitization and salesperson effectiveness, and salesperson effectiveness is considered in examining the relationship between digitization and job insecurity. We anticipate a codependent relationship between salesperson effectiveness and job insecurity, since the stress associated with job insecurity is likely to undermine salespersons' motivation to perform and thereby negatively affect salesperson effectiveness. In reverse, improved salesperson effectiveness signals to salespersons that digitization *improves* rather than *restricts* their value-creating abilities. Finally, to account for the effect of industry heterogeneity, we included three industry sector control variables: business-to-business manufacturing, business-to-business service, and the business to consumer.

RESEARCH DESIGN

Data Collection

Data collection commenced with personal interviews of key informants of firms with both a sales force and a Web-based channel. The interviewees included four stockbrokers, two e-commerce managers, two technology salespersons, and one insurance broker. These interviews were intended to explore emerging issues concerning e-business implementation and to inform our construct and measurement development efforts (Churchill 1979). The authors conducted the interviews and generated transcripts within 24 hours of each interview. A survey of key informant salespersons followed these personal interviews. The sample frame for the survey consisted of 3,200 randomly selected registered members of a national (United States) organization of sales professionals. A review of these members identified 920 salespersons fitting our criteria of working in a context involving a sales force and a Web-based channel. A prenotification e-mail requesting participation in the survey was followed by a second request 3 weeks later and a further request by telephone. Participants responded online by completing the survey at our designated Web site. This process realized a total of 168 usable responses, representing a response rate of 18.3 percent.

We assessed the impact of nonresponse bias using a method suggested by Armstrong and Overton (1977), which involves comparing the means of several constructs between early and late respondents. The first 25 percent of respondents were deemed early, and the last 25 percent were deemed late. The means of eight constructs in the two groups were compared and found not to differ significantly, indicating that nonresponse bias does not have a significant impact on study findings.

Measures

Our measurement development efforts complied with standard psychometric scale development guidelines (Anderson and Gerbing 1988). We developed measurements for four new constructs: digitization of selling activity, salesperson effectiveness, competitor imitation, and customer initiation. The new scales were pretested on a convenience sample of 14 sales professionals, and phone interviews were used to test items for face validity and ambiguity. All constructs included in this research were measured using multi-item scales. To see further information on the construct measures we used, please refer to the appendix.

Digitization of selling activity was developed as a formative scale (Bagozzi 1994), combining two types of sales force activities performed via a Web site. The scale includes three measures of executing purchase transactions and two measures of account maintenance. The mean of these five items was included in the factor analysis. We measured customer-initiated change using a 5-item scale designed to examine perceived customer interest in using a Web-based channel. Competitive imitation was measured using a 4-item scale that assesses the extent to which the industry has adopted a Web-based channel. We measured salesperson effectiveness using a 5-item scale designed to assess performance improvements of salespersons directly related to creating a digitized capability.

The remaining constructs employed measures drawn from previous research. For job insecurity, we employed a 4-item scale developed by Johnston, Parasuraman, Futrell, and Black (1990). Behavior-based and outcome-based controls were measured using 4 items each of scales developed by Babakus, Cravens, Grant, Ingram, and LaForge (1996). These scales were reduced in order to remove items unrelated to our research context while still maintaining the essence of the construct. We used a 3-item scale developed by Bresnahan, Brynjolfsson, and Hitt (2002) to measure investment in human capital. All constructs were measured using 7-point Likert-type scales. The industry effects were measured using single-item sector variables, namely, the business-to-business manufacturing sector, the business-to-business services sector, and the business-to-consumer sector, with the latter serving as a dummy variable contrast.

TABLE 1
Descriptive Statistics and Correlation Matrix

Variable	M	SD	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1. Salesperson effectiveness	3.82	1.37	1								
2. Job insecurity	1.83	1.11	–.14*	1							
3. Digitization of selling activity	3.42	1.21	.42*	.08	1						
4. Participation in strategy making	4.19	0.97	.34*	.04	.41	1					
5. Investment in human capital	3.05	1.64	.39*	–.07	.34*	.39*	1				
6. Outcome-based controls	5.15	1.48	–.01	–.05	.07	.10	.15*	1			
7. Behavior-based controls	4.56	1.36	.10*	–.09	.14*	.27*	.18*	.46*	1		
8. Customer-initiated change	4.53	1.36	.15*	–.06	.18*	.31*	.45*	.21*	.20*	1	
9. Competitive imitation	4.36	1.61	.17*	.02	.10	.24*	.30*	.13	.18*	.39*	1

NOTE: All correlations greater than .14 are significant at $p \leq .05$.

Reliability and Validity

Confirmatory factor analysis (CFA) techniques were used to estimate the measurement model. The reliability of digitization of selling activity (formative construct) was assumed to be .85 for the purpose of CFA procedures. All pairs of constructs comply with the discriminant validity test recommended by Fornell and Larcker (1981), since the amount of variance explained by each construct is greater than the squared correlation between each pair. Convergent validity was supported by all the item loadings on respective constructs being statistically significant (smallest t-value = 4.29). Scale evaluation yielded positive results, with composite reliability estimates for reflective constructs ranging between .73 and .94 (see appendix). Scales for new reflective constructs, salesperson effectiveness, competitive imitation, and customer-initiated change demonstrate good construct reliabilities with composite reliability estimates of .94, .87, and .86, respectively. Table 1 presents descriptive statistics and a correlation matrix of constructs. The fit indices for the measurement model indicate an acceptable level of fit ($\chi^2_{663} = 985.24$, $p < .00$, Comparative Fit Index [CFI] = .92, Incremental Fit Index [IFI] = .92, root mean square error of approximation [RMSEA] = .047). The RMSEA, which considers model parsimony, is less than .05, indicating a close fit (Browne and Cudeck 1993). Collectively, these tests indicate that our measures are reliable and valid reflectors of intended constructs.

Sample Description

The final sample comprises approximately 20 percent business-to-business manufacturing sector firms, 59 percent business-to-business service sector firms, and 21 percent business-to-consumer sector firms. Respondents are employed in such selling environments as technology, software, chemicals, auto parts, appliances, tools, printing, financial services, hospitality, and travel. To better understand the descriptive characteristics of our data, we carried out a cluster analysis. The advantage of cluster analysis is that it provides a classification when there is little a priori knowledge about the number of categories that will be formed and who the members of these categories will be (Dillon and Goldstein 1984). Using purchase transaction and account maintenance as clustering variables, we performed a cluster analysis using SAS's FASTCLUS—a nonhierarchical clustering technique developed to group items into a collection of K clusters. The items were standardized, and both the cubic clustering criterion (CCC) and the pseudo F statistic indicated that three clusters are appropriate (Hair, Anderson, Tatham, and Black 2000).

For the three-cluster solution, multivariate analysis of variance (MANOVA) was undertaken to help profile the three clusters (see Table 2). Cluster 1 (53% of the sample) comprises the least sophisticated Web site operations. They had moderate levels of transactions and very limited account maintenance at the site. Cluster 2 (32% of the sample) is the most sophisticated of the three clusters. Members of Cluster 2 do high levels of both account transactions and account maintenance on the Web. Cluster 3, the smallest of the three clusters, is an anomaly with high levels of transactions, but with a very limited amount of account maintenance through the Web.[3] A frequency analysis indicates that all three clusters are primarily composed of service firms (58% to 62%). For all three clusters, the average firm has a Web site for at least 18 months, providing a reasonable period of experience.

RESULTS

Following CFA, the system of equations represented in Figure 1 was estimated using three-stage least squares regression analysis. This approach leads to consistent and efficient parameter estimates of models incorporating reciprocal causation. Independent variables have been

TABLE 2
Three-Stage Least Squares Regression Results

		Salesperson Effectiveness		*Job Insecurity*	
	Hypotheses	*Coefficients*	t-*Values*	*Coefficients*	t-*Values*
Main effects					
Intercept		4.29**	16.45	2.52**	7.99
Digitization of core selling activity	Hypothesis 1+, Hypothesis 2+	0.39**	4.09	0.23**	2.77
Moderators					
Human capital investment		0.20**	2.67	–0.01	–0.29
Outcome-based controls		–0.02	–0.25	0.03	0.43
Behavior-based controls		–0.02	–0.18	–0.03	–0.47
Customer-initiated change		–0.04	–0.39		
Competitive imitation		0.11	1.45	0.07	1.12
Interaction effects					
Digitization × investment in human capital	Hypothesis 3a+, Hypothesis 3b–	–0.07	–1.24	–0.12**	–2.51
Digitization × outcome-based controls	Hypothesis 4a+, Hypothesis 5a+	0.15**	1.96	0.10**	1.99
Digitization × behavior-based Controls	Hypothesis 4b–, H5b–	–0.17**	–2.22	0.02	0.38
Digitization × customer-initiated change	Hypothesis 6+	0.14	1.46		
Digitization × competitive imitation	Hypothesis 7a–, H7b–	0.07	1.07	0.09**	1.98
Controls					
Job insecurity		–0.31**	–2.97		
Salesperson effectiveness				–0.20**	–2.85
Role ambiguity				0.32**	4.39
Participation in strategy making		0.02	0.21		
Business-to-business manufacturing sector		0.20	0.63	0.49**	1.97
Business-to-business-services sector		0.17	0.73	0.10	0.57
F-value (*p*-level)[a]		4.10 (.0001)		3.51 (.0001)	
R^2 (individual equation)[b]		.33		.26	
System-weighted R^2		.34			

NOTE: All parameter estimates are unstandardized estimates.
a. *F*-value based on two-stage least squares estimates.
b. Individual model R^2 based on two-stage least squares estimates.
**$p < .05$.

mean-centered to reduce potential collinearity. The equations used to test the models were specified as follows:

$$SE = \alpha_1 + \gamma_1 DIG + \gamma_2 HCI + \gamma_3 OC + \gamma_4 BC + \gamma_5 CI_C + \gamma_6 CI + \gamma_7 DIG \times PA + \gamma_8 DIG \times HCI + \gamma_9 DIG \times OC + \gamma_{10} DIG \times BC + \gamma_{11} DIG \times CIC + \gamma_{12} DIG \times CI + \gamma_{13} JIS + \gamma_{14} PA + \gamma_{15} ID1 + \gamma_{16} ID2 + \varepsilon_1,$$

and

$$JIS = \alpha_2 + \beta_1 DIG + \beta_2 HCI + \beta_3 OC + \beta_4 BC + \beta_5 CI + \beta_6 DIG \times IHC + \beta_7 DIG \times OC + \beta_8 DIG \times BC + \beta_9 DIG \times CI + \beta_{10} SE + \beta_{11} RA + \beta_{12} ID1 + \beta_{13} ID2 + \varepsilon_2,$$

where

SE = salesperson effectiveness,
JIS = job insecurity,
DIG = digitization of selling activity,
HCI = human capital investment,
OC = outcome-based controls,
BC = behavior-based controls,
CIC = customer-initiated change,
CI = competitive imitation,
RA = role ambiguity,
PA = participation in strategy development,
ID1 = industry dummy representing business-to-business manufacturing sector,
ID2 = industry dummy representing services sector,
α_1 and α_2 = intercept terms, and
ε_1 and ε_2 = error terms.

Table 2 presents the results for the system of equations. The variance explained by the independent variables of the system-weighted model is 34 percent. Regarding the individual models, the independent variables explain 33 percent and 26 percent of the salesperson effectiveness and job insecurity models, respectively. Our data support both main-effect hypotheses that digitization of selling activity increases salesperson effectiveness (Hypothesis 1: $\gamma = .39$, $p < .05$) and perceived job insecurity (Hypothesis 2: $\beta = .23$, $p < .05$). In terms of hypothesized moderating effects, human capital investment does attenuate the

adverse impact of digitization on job insecurity perceptions (Hypothesis 3b: $\beta = -.12$, $p < .05$) but does not enhance the effect of digitization on salesperson effectiveness (Hypothesis 3a). Our expectations are supported that the use of outcome-based controls will increase salesperson effectiveness (Hypothesis 4a: $\gamma = .15$, $p < .05$) and job insecurity (Hypothesis 5a: $\beta = .10$, $p < .05$) resulting from digitization. The use of behavior-based controls during digitization reduces salesperson effectiveness (Hypothesis 4b: $\gamma = -.17$, $p < .05$) but does not affect perceived job insecurity (Hypothesis 5b). Regarding the motivation for change, our hypothesis that salesperson effectiveness would be enhanced when digitization is perceived to be customer initiated (Hypothesis 6) is not supported by our data. Consistent with our prediction, when digitization involves competitive imitation, its adverse effect on job insecurity perceptions increases (Hypothesis 7b: $\beta = .09$, $p < .05$). However, competitive imitation does not significantly affect the level of salesperson effectiveness achieved from digitization (Hypothesis 7a).

Among the controls, role ambiguity increases job insecurity ($\beta = .32$, $p < .05$), job insecurity reduces salesperson effectiveness ($\gamma = -.31$, $p < .05$), and salesperson effectiveness reduces job insecurity ($\beta = -.20$, $p < .05$). Participation does not significantly affect digitization-related salesperson effectiveness. The business-to-business manufacturing sector has a significant effect on job insecurity ($\beta = .49$, $p < .05$), whereas the effect of the business-to-service sector is insignificant.

DISCUSSION

Implications for Managers

Our study addresses an important issue for both managers and researchers: how can firms minimize the dysfunctional effects of digitization on the sales force and achieve optimal channel integration? The results offer several guidelines for e-business implementation. Digitization appears to be a double-edged sword in the sense that it increases both the effectiveness and the job insecurity of salespeople. Our results indicate that this unintended effect, heightened job insecurity, may be countered by adequately investing in human capital to train salespersons to function more effectively in a digitized environment.

Our study adds another dimension to the existing knowledge on sales force control systems by illuminating their role in organizational change and technology implementation. The study indicates that the close supervision of behavior-based control systems is ineffective in guiding salespersons in a newly digitized multichannel environment. A more rewarding approach, suggested by our study, is to use outcome-based controls to encourage salespersons to undertake process innovation by exploring new ways of integrating the channel technology into their selling routines and by developing new routines and skills that improve their ability to deliver value to customers. Although outcome-based controls are a crucial means of motivating salespeople, our study indicates that they are also a source of job insecurity. It is imperative, therefore, that channel implementation managers complement the use of outcome-based controls with adequate training to prevent escalation of job insecurity concerns. Overall, these moderating effects of digitization are quite powerful, and managers are advised to pay early attention and devote substantial resources to ensuring that the appropriate training and outcome-based incentives are put in place to maximize sales force–related benefits of digitization.

The finding that human capital investment does not significantly improve the level of salesperson effectiveness achieved from digitization is troubling, since it raises doubts about the effectiveness of widely used approaches to e-business implementation. A possible explanation is that too much emphasis has been placed on philosophical discourse and too little effort devoted to training and education in technology operation and analytic skills. It is apparent that implementation managers need to balance efforts to motivate employees to embrace e-business with practical skills such as market segmentation, data analysis, modeling, and interpretation.

Our study finds that competitive imitation does not have a significant effect on digitization-related salesperson effectiveness but does increase job insecurity. One of the reasons for this might be that many of the strategies to which managers benchmarked later proved to be ineffective. Managers may be able to motivate salespersons more effectively by downplaying any perception that implementation is competitively driven. Our study did not find that perceived customer-initiated change affects the level of salesperson effectiveness achieved from digitization. The motivational effect of customer-initiated change is apparently insufficient to overcome some of the challenges of technology implementation.

Among the control variables, salesperson effectiveness reduces job insecurity, and job insecurity has a reciprocal effect on salesperson effectiveness. Short-term perceptions of insecurity will abate if increased technology ends up leading to greater effectiveness. This is consistent with recent perspectives on psychological contract theory, which hold that the most effective route to job security is via improvement in employee productivity. Collectively, these findings suggest that managers should avoid an incremental approach to human capital retention and development, which fosters salesperson ambiguity and insecurity. Managers should assess salespersons' competency and make appropriate elimination decisions prior to announcing a digitization plan. Following elimination, an explicit commitment should be made to the remaining

salespersons to provide the required training and assurance of job security.

Implications for Research

We conceptualize digitization as a construct that embodies the capability of stakeholders to interact with the firm in a self-directed manner. Whereas disintermediation is concerned with the discrete exclusion of channel layers, digitization recognizes continuous degrees of inclusion or exclusion of channel layers. It also accommodates the notion that some functions can be completely digitized, while others remain the responsibility of an intermediary. Amit and Zott (2001) suggested that value creation opportunities in e-business will emerge from innovative configurations of transactions and the integration of resources, capabilities, roles, and relationships between suppliers, partners, and customers. Digitization of firm capabilities represents a vehicle for researchers to explore the role of technology-based capabilities in creating these innovative configurations.

The motivation-ability framework has been primarily applied in the marketing literature as main-effect variables determining desired outcomes. The results of this study provide both conceptual and empirical evidence for their role in moderating the relationship between organizational process innovation (digitization) and desired outcomes. In presenting this contingency perspective and applying the framework in a newer context, our study advances midrange theory building with the motivation-ability framework.

Finally, our study found that the moderating factors have complementary effects on outcomes. For instance, human capital investments counter the job insecurity created by using incentive-based control systems and competitive imitation. Similarly, outcome-based control systems counter the negative effects of behavior-based control systems and job insecurity on salesperson effectiveness. Research efforts to design prescriptive conceptual frameworks for e-business implementation should consider the possibility of complementary trade-offs among implementation strategies in achieving objectives for different aspects of the organizational environment.

LIMITATIONS AND RESEARCH DIRECTIONS

The present study uses survey data from a cross section of industries to examine the digitization of core selling activities. Although this approach is useful from the perspective of demonstrating the broad applicability and scope of the impact of digitization, it limits the degree to which industry and relationship-specific inferences may be drawn from our study. Further research is therefore required to explore experiences in service and manufacturing industries and business-to-consumer and business-to-business relationships. Our research examines the capability and motivational factors that affect digitization. Future research should explore and account for the heterogeneity caused by salesperson characteristics such as career stage, risk propensity, gender, and lifestyle on employee response to digitization. In addition, some measurement limitations exist. Our measures of human capital investment are somewhat general. This might have had an impact on our results; future research should consider more specific measures.

This study constitutes an initial investigation of digitization in a sales force context. We examined digitization from the standpoint of the different types of activities being digitized and focused specifically on purchase transaction and account maintenance activities. However, digitization may be categorized according to the degree to which the activities being digitized constitute routines vis-à-vis complex transformational activities. This may lead to further clarification of the impact of digitization on salespersons. For instance, it is possible that salespersons' job security may be immediately improved by digitizing purely routine selling activities but may be worsened by digitizing complex activities. Further research is required to determine the multidimensionality of digitization.

Further research is also required in the area of training in e-business implementation. We recommend a more detailed examination of the effectiveness of various aspects of human capital and technology on e-business outcomes. In this respect, Sawhney and Zabin's (2001) distinction between sociotechnical systems (technology, procedures, and rules) and social systems (people) should prove useful. For example, what are some possible typologies of rules and procedures associated with the digitization of marketing activities, and how do they map into product development and delivery and relationship capabilities?

Finally, this study found that the use of behavior-based controls during digitization has dysfunctional consequences. Conventional knowledge suggests that individuals who are able to cope with ambiguity best serve complex selling environments; unfortunately, however, these individuals are in limited supply. Therefore, research should determine the appropriate behavior-based control techniques for different personality types and individuals with varying proximity to the customer.

CONCLUSION

In recent years, much has been written about e-business models and their implementation, but very little empirical research has been conducted to determine the effectiveness of proposed strategies. We have conceptualized digitization of selling activity and empirically examined its implications for sales force outcomes. Our findings suggest that digitization has mixed consequences for the firm and its salespersons, and we contend that the digitization of selling and service delivery capabilities constitute a promising area for further research.

APPENDIX
Measurement[a]

Scale and Items	*Composite Reliability*
Digitization of core selling activity (formative construct)	
Purchase transactions and account maintenance	
1. Customers are *not* required to identify a salesperson when making purchases online (reverse).	
2. A salesperson's intervention is *not* required to deliver a high-quality product/service (reverse).	
3. Customers can make payments online without contact with a salesperson.	
Using your e-commerce Web site, customers can . . .	
4. Monitor delivery status online without contact with a salesperson.	
5. Monitor their account balance without contact with a salesperson.	
Customer-initiated change	.86
1. We had inquiries from customers wanting to buy our products online.	
2. Our customers indicated a willingness to explore online buying.	
3. Our customers felt this was the wave of the future.	
4. There was underlying interest in e-commerce[b] from our customers.	
5. Our customers were really not interested in e-commerce (reverse).	
Competitive imitation	.87
1. Several competitors in our industry had online relationships with their customers.	
2. Some of our major competitors had already or were expected to introduce an e-commerce channel soon.	
3. An e-commerce channel is a competitive necessity in our business.	
4. The nature of competition in our industry made an online strategy critical to firms.	
Investment in human capital	.93
1. My company has undertaken considerable investments in training our sales force for e-commerce.	
2. My company has been cross-training our sales force for e-commerce.	
3. My company has held workshops in e-commerce for our sales force.	
Outcome-based control systems	.83
1. Managers use incentive compensation as a major means for motivating people.	
2. Managers make incentive compensation judgments based on the sales results achieved by salespeople.	
3. Managers reward salespeople based on their sales results.	
4. Managers use nonfinancial incentives to reward salespeople for their achievement (reverse).	
Behavior-based control systems	.77
1. Managers make joint calls with salespeople.	
2. Managers regularly review reports from salespeople.	
3. Managers monitor day-to-day activities of salespeople.	
4. Managers observe the performance of salespeople in the field.	
Job insecurity	.73
1. I feel secure about my job in this firm (reverse).	
2. Organizational changes do little to threaten the security of my job (reverse).	
3. The new strategy initiated by my company threatens my job.	
4. I am unlikely to be replaced by my company (reverse).	
Salesperson effectiveness	.94
1. We have been able to increase the number of products in our product line.	
2. I have more time to cross-sell other products.	
3. I have been able to focus more on valuable customers.	
4. I have been involved in less account maintenance issues.	
5. I have more time to target new customers.	

a. All items are measured using 7-point Likert-type scales with 1 = *strongly disagree* and 7 = *strongly agree*.

b. Recently, the literature has identified e-commerce as transactional and e-business as relational. At the time of data collection, this distinction had not emerged, and we did not detect that it was apparent to our respondents.

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NOTES

1. We distinguish digitization of selling activity from the more comprehensive concept of SFA, which refers to any system that automates all processes used in the sales order cycle from lead generation to post–sales service. This includes the ability to (1) provide sales, marketing, and service personnel with a set of integrated tools to communicate better in their tasks; (2) provide the sales force with sales call planning tools; and (3) provide supervisors with back end decision support systems to enable them to manage marketing sales and service efficiently (Narayandas and Shapiro 1996).

2. Research of salespersons' time allocation indicates that salespeople spend 70 percent of their time on nonselling activities and only 30 percent of their time on selling activities. Furthermore, administrative tasks account for nearly 30 percent of the nonselling time. Time freed up from such no-selling activities could be allocated to selling time (Mercer Management Consulting 2002).

3. A multivariate analysis of variance (MANOVA) and pairwise comparisons reveal that Cluster 3 has significantly higher levels of purchase transactions than the other two clusters. Cluster 2 has significantly greater levels of purchase transactions conducted on the Web than Cluster 1. Firms in Cluster 2 perform a significantly greater amount of account maintenance on the Web in comparison to Clusters 1 and 3, while there are no differences between Clusters 1 and 3 on this account.

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