FACTORS LEADING TO SALES FORCE AUTOMATION USE: A LONGITUDINAL ANALYSIS

ELI JONES, SURESH SUNDARAM, AND WYNNE CHIN

Motivating the sales force to adopt and use sales force automation (SFA) technology remains an issue. If salespeople are not committed to the selling organization's technology strategies, customer alliances are hindered.

Survey data were collected from a national sales force before and after the introduction of an SFA application. The results of this study indicate that salesperson attitudes (Perceived Usefulness, Attitude Toward the New System, and Compatibility) have an impact on *intention* to use new SFA systems prior to implementation. However, Personal Innovativeness, Attitude Toward the New System, and Facilitating Conditions have more of an effect on *infusion* of new SFA systems.

> Despite impressive advances in hardware and software capabilities, the troubling problem of underutilized systems continues. Low usage of installed systems has been identified as a major factor underlying the "productivity paradox" surrounding lackluster returns from organizational investments in information technology. (Venkatesh and Davis 2000, p. 186)

This quotation underscores the importance of more research on issues associated with the underutilization of technology in the workforce. This problem is also relevant to the sales force. In recent years, the issue of motivating the sales force to adopt and use sales force automation (SFA) technology has come to the forefront of trade journals and academic research (Campbell 1998; Keillor, Bashaw, and Pettijohn 1997; Parthasarathy and Sohi 1997; Rivers and Dart 1999).

To date, more than 60 percent of all SFA projects have been unsuccessful (Rivers and Dart 1999; Schafer 1997). Aside from the obvious negative effect on company profits, such failure can also hinder sales force efficiency and potential customer alliances. Unfortunately, the academic community remains silent in terms of reporting factors associated with SFA adoption and use. To date, only a few studies have been published in the area. Most notably, Rivers and Dart (1999) investigate the factors relating to the adoption of SFA systems among Canadian, mid-sized manufacturers. Others have only conceptualized factors associated with SFA adoption (Parthasarthy and Sohi 1997) and studied *types* of technology used by the sales force (Keillor, Bashaw, and Pettijohn 1997). Erffmeyer and Johnson (2001) examine organizational determinants of SFA adoption such as initial goals, implementation practices, outcomes, and evaluation measures. Clearly, these studies add to the little knowledge we have on the subject. However, empirical research on individual level factors leading to technology adoption and use among the sales force is still lacking. One notable exception is a recent paper by Speier and Venkatesh (2002).

Despite the many calls for empirical research on SFA (Caudron 1996; Manssen 1990; Marshall and Michaels 2001; Trumfio 1994; Wheatley 1998), few, if any, studies exist on increasing our understanding of SFA technology adoption at the individual level. Moreover, scholars and practitioners lack an understanding of SFA adoption by the sales force over time. This is important because companies cannot afford to continue purchasing SFA technology while getting lackluster results. It could result in the sales force becoming stagnant and obsolete (Colletti and Chonko 1997).

The purpose of this study is to add to our understanding of what motivates salespeople to adopt and use company-initiated technology. Specifically, we empirically test an extension of the Technology Acceptance Model (TAM) and the Theory of Reasoned Action (TRA) with a sample of insurance agents over the first six months of an SFA rollout. Borrowing from the information systems/information technology (IS/IT) literature, we examine the factors that theoretically lead to intention to adopt technology prior to the introduction of SFA technology and proceed to examine the same factors on technology infusion using a sample in a longitudinal research design.

SALES FORCE AUTOMATION: BACKGROUND

Taylor (1993) reports that SFA provides salespeople with faster access to information, thus reducing the time required to pre-

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pare for a client presentation and reducing the number of follow-ups when further information is requested. Verity (1993) identifies several additional benefits from SFA, including the reduction of errors common with manual sales processing, reduced support costs, improved close rates, and an increase in the average selling price through more accurate and timely pricing information.

Despite the benefits, the adoption of SFA technology by the sales force continues to be sluggish. Among the many possible reasons for underutilization of technology in the sales force are: (1) inertia—a natural inclination to continue doing what has always worked to avoid learning new methods and procedures, (2) trade-offs—perceived low benefit versus perceived high cost of learning the new technology, (3) lack of support from the selling organization, (4) lack of rewards to change, (5) nonmonetary costs of adoption—salespeople perceive that there is little time to spare for the learning of an innovation (Parthasarathy and Sohi 1997), and (6) personal and demographic factors (Parthasarathy and Sohi 1997). To address the underutilization problem, we looked to the IS/IT literature for possible answers.

IS/IT LITERATURE ON TECHNOLOGY ADOPTION

A variety of theoretical perspectives have been advanced in the IS/IT literature to enhance understanding of adoption and usage of technology in the workforce. A major stream of literature has focused on employing intention-based models that use *behavioral intention* to predict usage. These models focus on identifying the determinants of intention, such as attitudes, social influences, and facilitating conditions (Davis, Bagozzi, and Warshaw 1989, 1992; Hartwick and Burki 1994; Mathieson 1991). Most of this research is grounded in social psychology models such as the TRA (Azjen and Fishbein 1980) and the Theory of Planned Behavior (TPB) (Azjen 1985, 1991).

It is from this stream of literature that the TAM has emerged as a powerful and parsimonious way to represent the antecedents of technology usage through beliefs about perceived ease of use and perceived usefulness. Empirical tests of TAM have shown that it explains much of the variance in usage intention and self-reported usage (Davis 1989, 1993; Davis, Bagozzi, and Warshaw 1989; Mathieson 1991). However, TAM has not been tested with measures of the *extent* of technology use. A complete assessment of the model incorporating measures of extent of use is important to fully examine the degree to which the model can help scholars and practitioners better understand usage behavior. We include such a test using measures of extent of technology use, which we refer to as *infusion* (to be discussed later in the manuscript).

A second stream of research has integrated the intentions and innovations literature in the examination of determinants of technology usage, combining concepts from the TRA and individual user characteristics (Brancheau and Wetherbe 1990), information sources and communication channels (Nilikanta and Scammell 1990), and innovation characteristics (Moore and Benbasat 1991). We further extend the IS/IT literature by integrating the TAM and TRA models and testing our model in the context of the sales force.

In summary, the IS/IT literature has suggested a variety of models to explain IT usage (Davis 1989; Davis, Bagozzi, and Warshaw 1989; Hartwick and Barki 1994; Mathieson 1991). The goal of all these models has been to develop diagnostic tools to predict IS acceptance. Prior research in IS/IT has suggested that an individual's access to resources affects usage (Mathieson 1991). Davis, Bagozzi, and Warshaw (1989) and others have shown that attitudes toward usage (determined jointly by perceived usefulness and perceived ease of use) predict behavioral intention. They suggest further that usage behavior is a direct function of behavioral intention.

Still others (Barclay et al. 1995; Hartwick and Barki 1994; Mathieson 1991) have found that social and control factors have a significant influence on IT usage behavior. Social factors examined in the literature are essentially normative belief structures. Examining normative belief structures uncovers the influence exerted on an individual by his peers, superiors, and subordinates. Including control factors helps examine the effect of external resource constraints, on the lines of Triandis's (1979) notion of "facilitating conditions," which includes the extent and type of support provided to the individual that influences their use of the technology. In terms of innovation characteristics, the IS/IT literature has examined the extent of compatibility of the new technology with existing systems and technology (Moore and Benbasat 1993). We also include the extent of the new technology's compatibility with existing systems in our model.

With regard to the sampling context, most of the existing empirical studies in IS/IT have been conducted with salaried employees or university students. Clearly, these sampling frames are significantly different than salespeople. Adopting technology is one of many decisions autonomous salespeople make regarding their business (Jones, Roberts, and Chonko 2000). Salespeople are primarily evaluated on their sales results. Hence, if they do not perceive a clear benefit of how technology use adds to their productivity, they may choose not to adopt SFA.

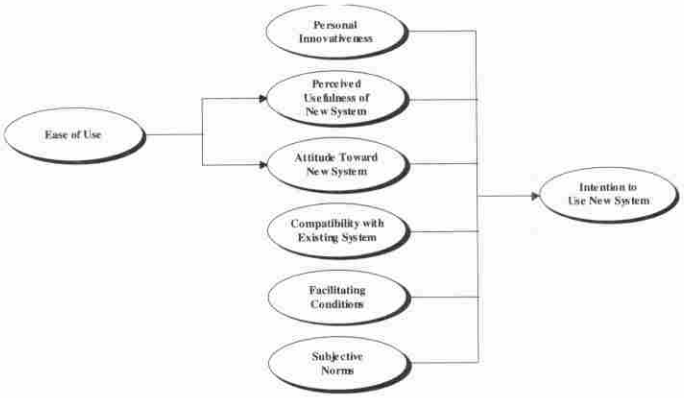
PROPOSED MODEL

We propose a model that incorporates many of the factors existing in current IS/IT studies, such as the attitudes (perceived usefulness, attitude toward the new system, and ease of use), normative and control beliefs (subjective norms and fa-

cilitating conditions), and individual user characteristics (personal innovativeness). A description of each construct employed in our model is outlined in Appendix 1. Figure 1 shows the model developed to examine the antecedents of intention to use SFA. The second model is identical with the exception of the dependent variable: infusion, which is a self-reported measure of the extent to which the full potential of the innovation has been embedded within an organization's operational or managerial work systems (Zmud and Apple 1992). At the individual level, we define infusion as the extent to which the salesperson uses SFA to its fullest extent to enhance their productivity. Figure 2 shows the Infusion model.

Traditionally, the IS/IT literature has viewed intention to use as a surrogate measure of actual usage (Davis 1989; Davis, Bagozzi, and Warshaw 1989). In all, the literature stops short of examining the extent of technology use. Whereas *intention to use* measures the likelihood that the salesperson will adopt the technology, *infusion* measures the extent of technology use. We therefore contend that the two measures are different and intention to use cannot be viewed as a surrogate measure of infusion. Hence, the core proposition of our paper is that the factors motivating intention to use the SFA system are different from those motivating infusion.

FIGURE 1
Factors Leading to Intention to Use Sales Force Automation



METHODOLOGY

Sample

We collected survey data from salespeople across the United States, of a large U.S.-based insurance company. The participating company is a Fortune 500 company with over $4 billion in revenues and has been in existence for 91 years. It is one of the largest financial services companies in the United States, with a nationwide sales force that sells insurance and retirement plans to consumers and workers' compensation plans to businesses. The sales organization is structured around geographic territories. The average district has 10 salespeople.

The salespeople in our sample are independent and completely responsible for their quotas and territories. The compensation is entirely based on commissions except for trainees who are paid a base salary plus commission. The average tenure of each salesperson is about five years, with each salesperson averaging about 11.5 years of sales experience. Seventy-five percent of the sample is married; 93 percent is white; and 94 percent has at least some college education. The average age of the sample is 41.72, with an average income in the range of $50,000 to $59,000.

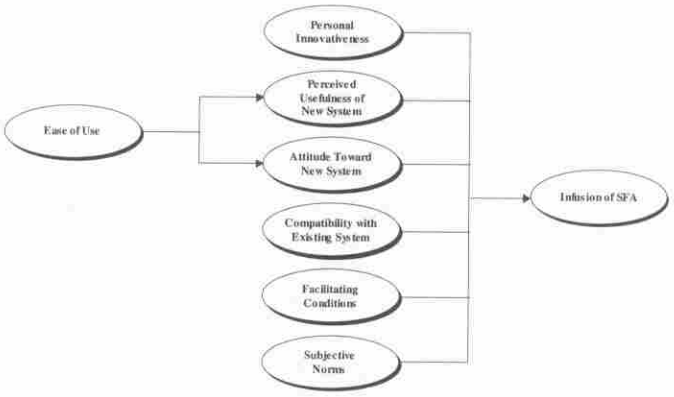
The SFA system introduction was primarily driven by the IS department and top management of the organization. The use and purchase of the SFA system were made voluntary by the selling organization, which developed specialized software to enable their agents to build presentations, share information, compute annuities, check order status, and commissions. The investment required to purchase the software and the hardware ranged from a minimum of $150 per month to a maximum of $225 per month for 24 months. The agents were given the option to purchase the laptop for $600 at the end of the 24-month period. However, the salespeople were required to purchase the hardware and software only through the selling organization.

We chose this sample because the salespeople are truly independent. We were careful to select a company that hires independent agents and values autonomy. Thus, SFA adoption and use were clearly autonomous decisions, not induced by company pressure to adopt. Moreover, using one company offered us greater control over exogenous factors and enhanced the internal validity of the study.

Data Collection

Data were collected in two waves. The first wave of data collection (pre-implementation) included measures for all variables except for infusion measures and was mailed out approximately two weeks prior to the rollout of the company's SFA system. The rollout of the SFA system was staggered by region; we mailed the questionnaires in four batches based on the company's SFA system implementation dates. The questionnaires were preceded by a letter from the company's president emphasizing the importance of their participation in the study. A total of 305 questionnaires, along with a copy of the letter from the company's president, were mailed to the sales agents in the first wave. The questionnaire included a total of 127 items, which included items not used in the current study. A reminder was mailed to elicit responses from those not responding to the first mailing. A total of 164 usable responses were received during the first wave for a response rate of 53.8 percent. All questionnaires were coded

FIGURE 2
Factors Leading to Infusion of Sales Force Automation



to ensure accurate tracking, and respondents were assured that the information collected would not be used to reveal their individual responses. The responses were anonymous to the company, albeit not to the authors.

The second wave (post-implementation) was conducted to obtain self-reports of infusion six months after the conclusion of the first wave of data collection. The second wave of questionnaires, along with a copy of the letter from the company's president, was mailed to the 164 agents who responded to the first wave. Eighty-five usable responses were received, for a response rate of 51.8 percent of the initial respondents and 27.9 percent of the total sample. The second questionnaire elicited responses pertaining to the agents' infusion (self-reported) of the SFA system. In addition, the questionnaire also elicited responses from the agents about their attitudes toward the current SFA system. The questionnaire included a total of 129 items, which included items not used in the current study. The two waves of questionnaires were mailed six months apart to reduce the likelihood of response contamination of the nonbehavioral variables (Shimp and Kavas 1984).

Measurement

The items to measure behavioral intentions, attitude, and subjective norms were generated based on procedures outlined by Azjen and Fishbein (1980) and Azjen (1985, 1991). Perceived usefulness, ease of use, facilitating conditions, and compatibility scales were based on those developed by Moore and Benbasat (1991) and Davis (1989). The scale for Personal Innovativeness was adapted from the scale developed by Goldsmith and Hofacker (1991). Consistent with the recommendations of Azjen and Fishbein (1980), all items in the questionnaire related specifically to the SFA system developed by the selling organization. In the second wave, we obtained the same measures that we did in the first wave but included self-reported measures of actual usage and infusion. The scale for Infusion was developed for this study using guidelines prescribed by Churchill (1979). The scales used to measure each construct used in this study are outlined in Appendix 2.

Analysis

The hypothesized models were estimated using a partial least squares (PLS) approach to account for the detrimental effects of measurement error. In this approach, the predictor and the dependent variables are viewed as latent variables (i.e., constructs) that cannot be measured directly. Multiple indicators for these latent variables are used instead.

The PLS procedure is gaining active interest and use among researchers (Chin 1998a; Chin and Gopal 1995; Compeau and Higgins 1995) due to its ability to model latent constructs under conditions of nonnormality and small to medium sample sizes. PLS is preferable to other techniques, like regression, that assume error-free measurement. As a components-based approach, PLS allows for the use of both formative and reflective measures, which is not generally achievable with covariance-based structural equation modeling techniques such as LISREL or EQS (Chin 1998b; Chin and Newsted 1999).

Our sample sizes of 164 and 85 for the first (intentions to adopt) and second (infusion) models, respectively, are smaller than the minimum recommended for covariance-based techniques. However, according to Chin and Newsted (1999), sample size requirements can be calculated by examining "the largest of two possibilities: (1) the block with the largest number of formative indicators (i.e., largest measurement equation) or (2) the dependent latent variable with the largest number of independent latent variables impacting it (i.e., largest structural equation). Using a regression heuristic of ten cases per indicator, we see that the sample size requirement would be ten times either (1) or (2), whichever is greater" (1999, pp. 326–327). For our analysis, this results in a sample size requirement of 70 or larger, which means that our sample size exceeds the minimum requirement.

The PLS procedure allows us to assess the predictability and significance of the structural models hypothesized in Figures 1 and 2. Prior to analyzing the models, we examined the data for nonresponse bias and found that there was no significant bias in the data collected. In other words, we found no significant differences in the responses of early and late respondents. We also examined the profile of respondents and nonrespondents to the post-implementation (Infusion Model) questionnaire and found no significant differences.

The models were analyzed using a bootstrap procedure in PLS. The software used for the analysis was PLSGraph Version 3.0 developed by one of the authors.

Table 1
Intention to Use Model—Correlation Matrix

	Personal innovativeness	Perceived usefulness	Attitude toward new systems	Compatibility with existing system	Facilitating conditions	Subjective norms	Ease of use	Intention to use
Personal Innovativeness	1.000	0.475**	0.398**	0.495**	0.396**	0.332**	0.678**	0.349**
Perceived Usefulness		1.000	0.806**	0.840**	0.536**	0.616**	0.517**	0.792**
Attitude Toward New System			1.000	0.801**	0.545**	0.557**	0.452**	0.803**
Compatibility with Existing System				1.000	0.575**	0.605**	0.577**	0.787**
Facilitating Conditions					1.000	0.423**	0.454**	0.541**
Subjective Norms						1.000	0.398**	0.571**
Ease of Use							1.000	0.374**
Intention to Use								1.000

Note: ** Correlation is significant at the 0.01 level.

RESULTS

The Intention to Use Model in Figure 1 presents the direct effects of Innovativeness, Perceived Usefulness, Attitude Toward the New System, Compatibility, Facilitating Conditions, and Subjective Norms on Intention to Use the New System. Again, all variables were measured prior to implementation of the new SFA system.

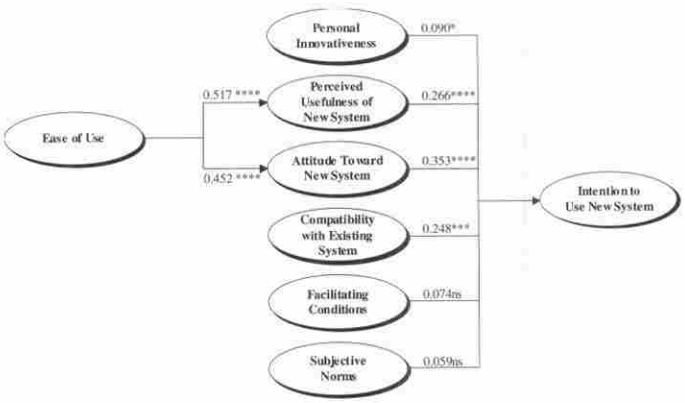
The R-square for the Intention to Use Model (Figure 3) at 0.739 is a considerable improvement over the reported R-squares for the TAM (Davis 1989; Davis, Bagozzi, and Warshaw 1989), which has been reported in the literature as a model that consistently explains usage intentions and behavior toward technology.

Using the data collected prior to implementation of the SFA system, we found that the direct effects of Subjective Norms and Facilitating Conditions on Intention to Use the New System were not significant. All other paths were significant at least at the 0.05 level except for Personal Innovativeness, which was marginally significant at the 0.10 level. The path coefficients are provided in Figure 3. The construct level correlation matrix for the Intention to Use Model is provided in Table 1.

The Infusion model hypothesized in Figure 2 examines the direct effects of the same independent variables discussed above on self-reported measures of Infusion of the New System. All of the independent variable measures were collected prior to implementation, whereas self-reported measures for Infusion were collected from the users post-implementation. The R-square for this model was 0.375. The construct level correlation matrix for the Infusion Model is provided in Table 2.

In the Infusion model, the direct effects of Perceived Usefulness and Compatibility with the Existing System are not significant. Personal Innovativeness is significant at least at the 0.05 level, whereas Attitude Toward the System and Facilitating Conditions are marginally significant at the 0.10 level. The path coefficients for this model are provided in Figure 4.

FIGURE 3
Factors Leading to Intention to Use Sales Force Automation



Notes: N = 164; $R^2 = 0.739$; ns = not significant; **** $p < 0.005$; *** $p < 0.010$; ** $p < 0.050$; * $p < 0.100$.

Limitations

Our study has three limitations. The first limitation concerns our sample. Since it was the first study of its kind, to the best of our knowledge, our intent was to keep the study tight by eliminating as many alternative explanations as possible for the results. The single company nature of the study necessitates caution in the generalization of the study results.

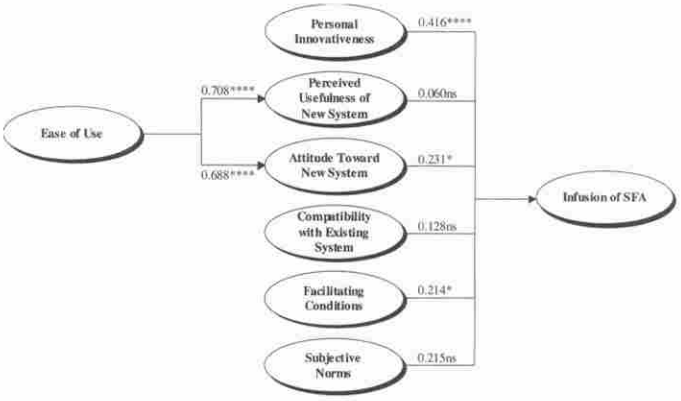
Our sample sizes of 164 and 85 for the first (intention to

Table 2
Infusion Model—Correlation Matrix

	Personal innovativeness	Perceived usefulness	Attitude toward new systems	Compatibility with existing system	Facilitating conditions	Subjective norms	Ease of use	Intention of use
Personal Innovativeness	1.000	0.562**	0.523**	0.596**	0.503**	0.223*	0.720**	0.520**
Perceived Usefulness		1.000	0.654**	0.780**	0.572**	0.224*	0.708**	0.349**
Attitude Toward New System			1.000	0.703**	0.602**	0.082	0.688**	0.389**
Compatibility with Existing System				1.000	0.581**	0.194	0.756**	0.408**
Facilitating Conditions					1.000	0.163	0.592**	0.208*
Subjective Norms						1.000	0.205	0.302**
Ease of Use							1.000	0.405**
Infusion of Use							1.000	

Notes: ** Correlation is significant at the 0.01 level; * correlation is significant at the 0.05 level.

FIGURE 4
Factors Leading to Infusion of Sales Force Automation



Notes: N = 85; $R^2 = 0.375$; ns = not significant; **** $p < 0.005$; *** $p < 0.010$; ** $p < 0.050$; * $p < 0.100$.

use) and second (infusion) models are smaller than the minimum recommended for covariance-based techniques. However, as explained earlier, the sample size may be determined by the dependent latent variable, with the largest number of independent latent variables affecting it (i.e., largest structural equation). For our research, this translates to a sample size of 70 or greater. We also used bootstrapping to compensate for the small sample size. Future research should, however, examine the robustness of the results obtained here with larger samples, preferably across industries to further generalizability. We acknowledge that with an overall response rate of 27.87 percent for the longitudinal study, the results may be significantly biased toward respondents. However, as stated earlier, we found no differences between early and late respondents. In addition, we found no differences in the profiles of the respondents and nonrespondents of the post-implementation survey.

Second, we used a self-report measure due to the lack of availability of actual usage information. Future studies should attempt to replicate the results obtained here with actual usage data, if possible. Finally, our model is a series of main effect relationships. We did not include moderators. For example, possible contingency variables are bonus incentives for technology use, network externalities, and the "big brother" effect (Anderson 1996). Future research should investigate contingent relationships.

IMPLICATIONS

The goal of our research was to uncover factors that lead to adoption and use of SFA. We focused on two dependent variables: intention to adopt and infusion. The latter is a new and important variable in sales research; it measures not the casual use of technology but the extent to which the SFA system becomes a part of the salesperson's selling routine. Furthermore, it is the salesperson's belief that he is using the new system to its fullest extent to enhance his productivity. By conducting a longitudinal analysis, we were able to test factors leading to *intention to adopt* and those same factors on *infusion*. Both theoretical and managerial implications arise from our study.

When we compare pre-implementation results using intention to adopt as the dependent variable to post-implementation results using infusion as the dependent variable, we find that salesperson attitudes (Perceived Usefulness, Attitude Toward the New System, and Compatibility) have more of an impact during pre-implementation (as predicted). However, Personal Innovativeness, Attitude Toward the New System, and Facilitating Conditions have more of an effect on

infusion. Theoretically, this suggests that future research must focus on the differences between the antecedents of actual adoption and intentions to adopt. Theories such as TRA and TPB predict intentions to adopt but fall short of predicting actual technology use.

Subjective Norms is a measure of the influence that the salesperson's peers, superiors, and clients have on their decision to use the SFA technology. Prior to their adoption of a new SFA system, other salespeople, the superiors, or the clients do not have any experience with the technology. Hence, it can be argued that they are less likely to have an influence on the salesperson's intention to adopt the SFA technology. As the results show, the salespeople are likely to be influenced more by the perceived compatibility and usefulness of the SFA technology with the existing systems and their attitude toward the SFA technology. They may also be influenced by their own tendency to be early adopters of new technology. The results may also explain why Facilitating Conditions does not have a direct effect on their intention to use the SFA technology. It may be that since the technology is yet to be implemented, the salespeople are focused more on their perceptions of the technology and their attitudes toward it rather than the perceived support from the organization in driving their intention to adopt the technology.

Salespeople, as autonomous decision-makers, are more likely to be influenced by their own perceptions of the benefits of the technology rather than their peers, their superiors, or their clients. In addition, the use and adoption of the SFA technology was voluntary in this case. Given that the salespeople had been using the SFA system for only about six months at the time of the Infusion Model survey, it may be that some salespeople had not yet seen the full benefits that other salespeople had derived from the technology. Salespeople in this organization were not involved in team selling. An alternate explanation could be that salespeople are more likely to be influenced by their peers to infuse technology when they work closely in teams. It could be possible that clients have not been exposed to the technology and, therefore, did not have any influence on the salesperson's adoption of the technology. Client influence should be more prevalent in business-to-business settings. Future research should examine these possibilities.

Extant IS/IT literature has measured actual usage of technology in terms of frequency rather than infusion. Therefore, it can be expected that superiors may have an influence on the salesperson's usage frequency. However, the actual infusion of the system may depend on the benefits of the technology as perceived by the salesperson. In this paper, we have only examined the Infusion and not the usage frequency of the technology. Since the salespeople had already begun using the SFA technology at this point in time, it can be expected that their perceived usefulness of the system and perceived compatibility of the system did not influence infusion. Once the salespeople had begun using the technology, it can be expected that their attitude toward the system would likely influence their infusion as shown by the results. Similarly, it is only after implementation that salespeople would realize the benefits of the facilitating conditions that the organization provides to ensure infusion of the technology.

Managerially, our research suggests that if managers were to ask their salespeople about their *intentions* to use technology before the company purchased SFA, they would get adoption estimates that would differ significantly from actual figures. For example, it is commonly understood that selling organizations should involve their salespeople before purchasing SFA systems (Campbell 1998). In the evaluation stage, managers might ask their salespeople about their perceptions of the potential system's usefulness and compatibility with existing systems and processes. The tendency would be that if the salespeople perceive benefits in the SFA system the company would invest in the new system. However, our results suggest that the salespeople's attitudes are *not* the only factors to consider. Social influences and facilitating conditions are also important.

We found that Personal Innovativeness was positively related to Infusion. This suggests that managers should seek to hire those salespeople who demonstrate personal innovativeness during the interview process. Perhaps an employment screen that taps into the salesperson's inclination toward experimenting with and adopting new technology can be developed to aid managers in this process.

The fact that Attitude toward the New System is positively related to Infusion suggests that managers would do well to inform their salespeople about the system's features and benefits prior to implementation. Such information dissemination would lead to positive attitudes about the SFA system that could potentially lead to higher infusion levels of the technology.

The help that organizations provide (i.e., Facilitating Conditions) in the adoption process can greatly affect salespeople's actual adoption and use of SFA. This point emphasizes the need for continuous training in the area. Salespeople who perceive that the organization provides continuous support are more prone to use the company-initiated SFA system. Therefore, access to training, training manuals, and support from a help desk enhances infusion of SFA.

In summary, salespeople's attitudes primarily affect intentions to use SFA but not necessarily infusion. Organization support by way of support from sales managers and sales training, social norms, and personal innovativeness actually make the difference in adoption and use of SFA. This study provides a starting point from which to build. This research should enable managers to identify the antecedents of infu-

sion that can be manipulated to ensure higher infusion levels of new sales force technology.

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APPENDIX 1

CONCEPT DEFINITIONS

Construct	Definition
Personal Innovativeness	*Personal innovativeness* is the degree to which an individual is relatively earlier in adopting new ideas than other members of a system (Rogers 1995). Measured using a five-item, seven-point Likert scale.
Perceived Usefulness of the New System	*Perceived usefulness* is the degree to which a person believes that using a particular system would enhance his job performance (Davis 1989). Measured using a six-item, seven-point Likert scale.
Attitude Toward New System	*Attitude toward new system* is a measure of the overall attitude toward the usage of the new system. Measured using a nine-item semantic differential scale.
Perceived Ease of Use of the New System	*Perceived ease of use* is the degree to which a person believes that using a particular system would be easy to use (Davis 1989). Measured using a six-item, seven-point Likert scale.
Compatibility with Existing System	*Compatibility with existing system* is defined as the degree to which the innovation fits with the potential adopter's existing values, previous experiences, and current needs (Rogers 1995). Measured using a four-item, seven-point Likert scale.
Facilitating Conditions	*Facilitating conditions* is the degree to which a person believes that she has been provided with the resources and the external support to use a particular system (Triandis 1979). Measured using a four-item, seven-point Likert scale.
Subjective Norms	*Subjective norms* is the degree to which persons perceive that their superiors, peers, and customers would want them to use a particular system (Burnkrant and Page 1988; Shimp and Kavas 1984). Measured using a three-item, seven-point Likert scale.
Intention to Use the New System	*Intention to use* is the degree to which a person believes that he will use a particular system (Azjen 1985; Davis 1989; Taylor and Todd 1995). Measured using a four-item, seven-point Likert scale.
Infusion	*Infusion* is the extent to which the full potential of the innovation has been embedded within an organization's operational or managerial work systems (Zmud and Apple 1992). We define infusion as the extent to which the salesperson fully utilizes SFA to enhance her productivity. Measured using a four-item, seven-point Likert scale.

APPENDIX 2

SCALE ITEMS

Personal Innovativeness (Average Variance Extracted: 0.80; Composite Reliability: 0.92)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 If I heard about a new information technology, I would look for ways to experiment with it.	0.9433	–3	–2	–1	0	1	2	3
2. Among my peers, I am usually the first to try out new information technology.	0.9036	–3	–2	–1	0	1	2	3
3 In general, I consider myself quite innovative when it comes to information technology.	0.8379	–3	–2	–1	0	1	2	3

Perceived Usefulness (Average Variance Extracted: 0.87; Composite Reliability: 0.98)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 Using [technology] in my job would enable me to accomplish tasks more quickly.	0.9047	–3	–2	–1	0	1	2	3
2 Using [technology] would improve my job performance.	0.9373	–3	–2	–1	0	1	2	3
3 Using [technology] in my job would increase my productivity.	0.935	–3	–2	–1	0	1	2	3
4 Using [technology] would enhance my effectiveness on the job.	0.9546	–3	–2	–1	0	1	2	3
5 Using [technology] would make it easier to do my job.	0.9135	–3	–2	–1	0	1	2	3
6 I would find [technology] useful in my job.	0.9412	–3	–2	–1	0	1	2	3

Attitude Toward New System (Average Variance Extracted: 0.83; Composite Reliability: 0.98)

1. Overall, using [technology] is a _____ idea.

Factor Loadings									
0.8793	**bad**	–3	–2	–1	0	1	2	3	**good**
	foolish	–3	–2	–1	0	1	2	3	**wise**

2. I _____ the idea of using [technology]

Factor Loadings									
0.8392	**dislike**	–3	–2	–1	0	1	2	3	**like**

3. Overall, my using [technology] would be

Factor Loadings									
0.9072	**unpleasant**	–3	–2	–1	0	1	2	3	**pleasant**
0.9475	**negative**	–3	–2	–1	0	1	2	3	**positive**
0.9465	**worthless**	–3	–2	–1	0	1	2	3	**valuable**
0.9451	**harmful**	–3	–2	–1	0	1	2	3	**beneficial**
0.9307	**bad**	–3	–2	–1	0	1	2	3	**good**
0.9143	**unenjoyable**	–3	–2	–1	0	1	2	3	**enjoyable**

Ease of Use (Average Variance Extracted: 0.84; Composite Reliability: 0.97)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 Learning to operate [technology] would be easy for me.	0.9168	–3	–2	–1	0	1	2	3
2 I would find it easy to get [technology] to do what I want it to do.	0.9366	–3	–2	–1	0	1	2	3
3 My interaction with [technology] would be clear and understandable.	0.941	–3	–2	–1	0	1	2	3
4 I would find [technology] to be flexible to interact with.	0.881	–3	–2	–1	0	1	2	3
5 It would be easy for me to become skillful at using [technology].	0.9089	–3	–2	–1	0	1	2	3
6 I would find [technology] easy to use.	0.9178	–3	–2	–1	0	1	2	3

Compatibility of New System (Average Variance Extracted: 0.86; Composite Reliability: 0.96)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 Using [technology] will be compatible with all aspects of my work.	0.9146	–3	–2	–1	0	1	2	2
2 Using [technology] will be completely compatible with my current situation.	0.9145	–3	–2	–1	0	1	2	3
3 I think that using [technology] will fit well with the way I like to work.	0.9537	–3	–2	–1	0	1	2	3
4 Using [technology] will fit into my work style.	0.9346	–3	–2	–1	0	1	2	3

Facilitating Conditions (Average Variance Extracted: 0.70; Composite Reliability: 0.90)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 There are no barriers to my using [technology] in my job.	0.8557	–3	–2	–1	0	1	2	3
2 I would be able to use [technology] in my job if I wanted to.	0.797	–3	–2	–1	0	1	2	3
3 I have access to the resources I would need to use [technology] in my job.	0.8065	–3	–2	–1	0	1	2	3
4 If I wanted to, there are no obstacles to my using [technology] in my job.	0.8806	–3	–2	–1	0	1	2	3

Subjective Norms (Average Variance Extracted: 0.93; Composite Reliability: 0.98)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 My co-workers would want me to use [technology].	0.9542	–3	–2	–1	0	1	2	3
2 My superiors would want me to use [technology].	0.9691	–3	–2	–1	0	1	2	3
3 My clients would want me to use [technology].	0.9733	–3	–2	–1	0	1	2	3

Intention to Use the New System (Average Variance Extracted: 0.95; Composite Reliability: 0.99)

Statement	Factor loadings	Strongly disagree			Neither			Strongly agree
1 For future work I would use [technology].	0.9786	–3	–2	–1	0	1	2	3
2 I intend to make regular use of [technology] for my work when it becomes available.	0.9786	–3	–2	–1	0	1	2	3
3 When it is available, I will likely use [technology] for my work.	0.9848	–3	–2	–1	0	1	2	3

			Ex-tremely weak	Very weak	Some-what weak	Neither	Some-what strong	Very strong	Ex-tremely strong
4	My intention to use [technology] as part of my work is:	0.9554	–3	–2	–1	0	1	2	3

Infusion of New System (Average Variance Extracted: 0.77; Composite Reliability: 0.93)

Statement		Factor loadings	Strongly disagree			Neither			Strongly agree
1	I am using [technology] to its fullest potential for supporting my own work.	0.9444	–3	–2	–1	0	1	2	3
2	I am using all capabilities of [technology] in the best fashion to help me on the job.	0.9468	–3	–2	–1	0	1	2	3
3	I doubt that there are any better ways for me to use [technology] to support my work.	0.6806	–3	–2	–1	0	1	2	3
4	My use of [technology] on the job has been integrated and incorporated at the highest level.	0.9069	–3	–2	–1	0	1	2	3