Salesforce automation tool selectivity: an agency theory perspective

Michael L. Mallin

The Edward H. Schmidt School for Professional Sales, The University of Toledo, Toledo, Ohio, USA, and

Susan K. DelVecchio

Department of Marketing, College of Business, East Carolina University, Greenville, North Carolina, USA

Abstract

Purpose – A strong and repeating theme in sales force automation (SFA) tool research is perceived usefulness. When salespeople perceived high levels of SFA tool usefulness, they report higher intent and actual use. The authors aim to apply agency theory to the concept of perceived usefulness (from the technology acceptance model) to explain why salespeople adopt some forms of SFA and reject still others. A set of hypotheses are proposed and tested revealing that salespeople will decide to use a SFA tool because they perceive it to be useful to themselves (i.e. PU_{sp}) and to their management (PU_{sm}).

Design/methodology/approach – Based on responses from 105 salespeople, the SFA tools they used were categorized as either outcome-based (i.e. helping salespeople achieve their selling outcome goals) or activity-based tools (i.e. helping management monitor selling activities/behaviors). Regression analyses were used to test six hypotheses relating salespeople's usage of each category of tools (the dependent variable) to the salesperson perceived usefulness constructs (both PU_{sp} and PU_{sm} – the independent variables).

Findings – The findings confirm that SFA tool use (either outcome-based or activity-based) is a function of both forms of perceived usefulness (i.e. PU_{sp} and PU_{sm}). Furthermore, when PU_{sp} is high, the salesperson is more likely to use outcome-based (versus activity-based) SFA tools over a longer period of time.

Practical implications – The paper validates agency theory as a useful paradigm for understanding salesperson SFA tool adoption. Salespeople will use SFA tools that they view as useful to their productivity and that the sales manager's influence over the salesperson's use of SFA tools may not be as important. To encourage use, firms need to emphasize how a SFA tool can meet salesperson needs.

Originality/value – The paper is the first to hypothesize and test the relationship between perceptions of SFA tool usefulness and actual usage by considering salesperson perception of usefulness to themselves (PU_{sp}) and perception of usefulness to their sales manager (PU_{sm}).

Keywords Sales force, Sales management, Management theory, Marketing communications

Paper type Research paper

An executive summary for managers and executive readers can be found at the end of this article.

Industrial salespeople take advantage of some forms of information technology and reject still others (Wilson, 2001). For example, desktop computing has achieved a high level of use, but the acceptance of more mobile forms lag (Art, 2005; Engle and Barnes, 2000). Even those salespeople who use laptops tend to do so without integrating dynamic analytical forms of software (Beasty, 2006; Morris, 2005; Schrage, 2003). Given the trend toward increasing investments in more sophisticated forms of technology, salesperson's selectivity is problematic. Some estimate failure rates to reach ROI of new technologies deployed to the salesforce fall within an alarming 60-75 percent (Robinson *et al.*, 2005). Thus, management has a substantial interest in predicting which technology tools will be used. However, predicting the behaviors of a geographically dispersed autonomous field salesforce is a

challenge. In fact entire issues of leading journals have been devoted to examining the challenges of salesforce automation tools.

Agency theory offers explanations of how the boundary-spanning positions affect the salesperson's perceptions of SFA usefulness. Agency theory is particularly useful over other frameworks (e.g. transaction cost analysis (Williamson, 1985), and organizational theory (Ouchi, 1979)) because of its explanatory power (Krafft, 1999; Krafft *et al.*, 2003). The agent's (salesperson's) behavior is influenced by both his or her need for autonomy and the principle's (sales manager's) need for control. Thus, the behavior of interest here (i.e. the actual usage of an IT tool) can be predicted based on whom the salesperson perceives its usefulness benefits. Agency theory emphasizes the alignment of goals and objectives between two individuals working together (Basu *et al.*, 1985). Since the field salesperson serves more than one purpose, is answerable to multiple constituents (e.g. customer, sales manager, self), and typically are compensated using a combination of (fixed) salary and (variable) commission, they are likely to perceive more than one form of SFA tool usefulness. The salesperson's perceptions of usefulness fall into this similar pattern. The primary purpose of deploying

any one form of tool may be classified as meeting either internal purposes of management or external purposes of providing customer service.

A strong and repeating theme in the SFA adoption stream of research is perceived usefulness. When perceived usefulness is high, salespeople report higher intent (Celuch *et al.*, 2004; Jones *et al.*, 2002; Robinson *et al.*, 2005), actual use (Morgan and Inks, 2001; Schillewaert *et al.*, 2005) and level of use of technology (Avlonitis and Panagopoulos, 2005; Johnson and Bharadwaj, 2005; Rangarajan *et al.*, 2005; Speier and Venkatesh, 2002). We apply agency theory to the concept of perceived usefulness (from technology acceptance model) to explain why salespeople adopt some forms of SFA and reject still others. The set of hypotheses proposed and tested here build on the principal/agent dichotomy that attempts to explain the behavior of a salesperson that is both autonomous and managerially monitored. Specifically, we extend the extant literature on SFA tool adoption and use by proposing that salespeople will decide to use a SFA tool because they perceive it to be useful to themselves and to their management.

Agency theory framework: classifying tools and describing perceptions

Classifying SFA tools: activity-based and outcome-based

Agency theory addresses the problem of how the sales manager can control the salespersons' activities (Darmon, 1998). Because the sales manager (the principal) and salesperson (the agent) may have divergent goals, risk preferences, and do not always share information (i.e. information asymmetry) various forms of controls are used in order to reduce uncertainty and performance ambiguity by assuring the agent is compliant (Eisenhardt, 1989). The primary role of control here is to measure, monitor, and reward such that individuals pursuing their own self-interests will also pursue the collective interests (i.e. both agent's and principal's) (Eisenhardt, 1985). One way to do this is to provide the salesforce with SFA tools designed to make salespeople more productive and to provide management with the capability to measure, monitor, and reward selling outcomes and activities. Thus, SFA tools may be viewed as a mechanism of salesforce control designed to bridge the divergence of goal dichotomy and manage the risks and uncertainty that a salesperson will not act opportunistically (i.e. engage in only self-serving interests). SFA tools designed primarily to support the efforts of the salesperson to produce realized results (i.e. outputs such as sales units, revenue, profit margin, etc.) may be conceptualized as outcome-based tools. Other SFA tools are developed with sales management's interests at the forefront. These tools provide managers with the ability to measure, monitor, and compensate selling activity (sales call logs, lead tracking, sales forecasting, etc.). These SFA tools may be conceptualized as activity-based.

The primary purpose of an outcome-based tool is the facilitation of salesperson-buyer interactions. Examples include tools that utilize technology in order to assist the salesperson in providing their customer with the right product, service, or information in an efficient and effective manner. Consistent with the definition of outcome-based control (Anderson and Oliver, 1987; Cravens *et al.*, 1993; Oliver and Anderson, 1995), the focus is on attaining objective and measurable sales results. Colombo (1994) identified functional areas that primarily take an outcome focus. For example, a system may be introduced to the salesforce that is designed to improve customer contact efficiency. These efficiencies in turn would help the salesperson analyze customer needs ultimately resulting in closing the sale. Such a system may consist of a notebook computer equipped with wireless Internet access (to facilitate customer information gathering and communications while away from the office) and software to track customer appointments, conversations, and order information (to assists the salesperson in delivery of sales to customers).

Activity-based tools have functions or characteristics that help sales managers collect information. Because of the subjective nature of evaluating and measuring such activities, activity control requires more frequent managerial evaluation and monitoring of these routine activities. SFA tools of this nature utilize technology to streamline the process of collecting and organizing salesforce data. This information will most likely not be used or seen by the customer; rather it will assist management in understanding and making decisions regarding the efficiency of the salesperson and salesforce. To facilitate this, the SFA system may include tools to track and report selling activity such as sales calls, lead tracking, and sale status. Manager's justification for asking that salespeople use these tools may be tied to a salary (fixed) component of the compensation plan. All this information may be considered useful to the salesperson (record keeping), the sales manager (results tracking), or both. Subsequently, these components of perceived usefulness are described.

Describing perceptions: usefulness to salesperson and manager

The Theory of Reasoned Action suggests human behavior is predicated on an individual's attitude toward the behavior, that is, "an individual's positive or negative feelings about performing the target behavior" (Fishbein and Ajzen, 1975, p. 216). In the context of technology adoption, this behavior is the use of some given information system. To provide a model centered on technology acceptance, Davis (1989) combined the theoretical underpinnings of attitude theory, self-efficacy, behavioral decisions and adoption of innovation. This model uses the core construct of perceived usefulness to develop the technology acceptance model (TAM). Perceived usefulness is the potential user's belief that using an information technology will benefit him/her by enhancing his/her job performance. Perceived usefulness has emerged in SFA studies as a crucial component of the TAM model.

While perceived usefulness is a pivotal concept, meta-analyses suggest it is not a global or one-dimensional concept (Ma and Liu, 2004). Employees and organizations seek to achieve more than one goal, serve multiple purposes and even multiple constituencies. Bush *et al.* (2005) found these numerous organizational goals drive the adoption of entire SFA systems. It is highly likely that perceived usefulness might reflect these goals, purposes or constituencies (Adams *et al.*, 1992). Global measures of perceived usefulness, therefore, do not reflect numerous forms of outcomes employees are seeking. Torkzadeh *et al.* (2005) have examined multiple forms of perceived usefulness in non-sales settings and found two emerge: one describing managerial control and one describing customer satisfaction. For the industrial salesperson these are highly relevant.

Agency theory suggests the perceptions of the salesperson (agent) will reflect the need to balance the benefits sought by the principal (manager) with those of the customer. Furthermore, the reward system in place reinforces this need. Based on the mix of salary (fixed) and commission (variable) compensation used to reward performance, these perceptions may be altered. For example, a salesperson on a 100 percent commission compensation plan will likely respond to the needs of his/her customer over those of the manager. Conversely, full salary compensation would favor the salesperson responding to his/her manager's needs first and foremost. The balance between serving both constituents comes into play when some mix of commission and salary are used to reward performance. Thus agency theory suggests the two dimensions underlying perceived usefulness relate to the primary beneficiaries. When the salesperson is perceived to be the primary beneficiary of a SFA tool, then the perceived usefulness is to him/her (hereafter referred to as PU_{sp}). The usefulness determination may also be based on the perception that the primary beneficiary of SFA tool usage is the salesperson's sales manager (hereafter referred to as PU_{sm}).

The salesperson's boundary spanning role further emphasizes this need to balance the demands of sales management with those of customers. Furthermore, they must do so using appropriate sales behaviors that lead to expected sales outcomes. In fact, the salesperson's new role has been described as finding this balance while resolving conflict (Weitz and Bradford, 1999). A salesperson's performance is frequently a combination of two categories of descriptors (i.e. outcome-based and behavior-based) (Ingram et al., 2002). The perceived usefulness – to the salesperson himself or to his manager – may drive the actual adoption (of either an activity-based or an outcome-based tool).

Usage of SFA tools: a function of perceived usefulness

Multiple influences work in unison to lead a salesperson to use a SFA tool. It is unlikely a salesperson will succeed by serving one constituency to the exclusion of the other (i.e. either management or customer). This notion is supported in two studies that found both supervisor and external influences were significant. Both internal (i.e.) supervisor and external (i.e. competition) had a strong influence on pharmaceutical salespeople's attitudes toward using information technology (Avlonitis and Panagopoulos, 2005). Similarly Karahanna and Straub (1999) found both supervisory and external factors influenced the use of e-mail software. Because the salesperson serves both internal (i.e. management) and external (i.e. customer) constituents, and their compensation is likely to be a mix of salary (fixed) and commission (variable) (Galea, 2004), a salesperson can perceive a tool to be useful to both (e.g. PU_{sp} and PU_{sm}).

Outcome-based mechanisms offer the agent rewards for closing the sale. Since the sales manager is also evaluated on this basis, perceptions of usefulness to both the salesperson and the manager may be influential. When governance mechanisms are outcome-based, the agent is likely to consider both self-interest and the interests of the principal in determining a course of behavior. Conflicts of self-interest are reduced since the rewards to both principal and agent center on the same actions (Eisenhardt, 1989). When this occurs, uncertainty is reduced since the risk of opportunistic behavior (of either exchange member) is minimized. The

salesperson and manager are both rewarded by pursuing sales outcomes (e.g. generating sales revenue, new accounts, etc.), thus conflict and uncertainty should be minimal. Therefore, our first hypothesis suggests salespeople's usage of outcome-based SFA tools will be dependent on the perceived usefulness to both salesperson (PU_{sp}) and sales manager (PU_{sm}).

H_1. Salespeople's use of outcome-based SFA tools is dependent upon the degree to which the salesperson perceives the SFA system to be useful to the performance of his/her sales job (i.e. PU_{sp}) and useful to sales management to measure and monitor sales output (i.e. PU_{sm}).

Agency theory suggests that the principle's access to information is effective in curbing agent opportunism (Eisenhardt, 1985, 1989). This argument centers on the information mechanism serving to apprise the principal about the agent's behavior. Since activity-based tools make it difficult to deceive the principal, the agent is just as likely to behave in the interests of the principal as his own. The salesperson, realizing that the sales manager has the ability to track information on his activities (making sales calls, managing expenses, etc.), is likely to use the tool based on an obligation to comply or from fear of repercussions. Such behavior may stem from some fixed salary component of the salesperson's compensation. Thus our second hypothesis states:

H_2. Salespeople's use of activity-based SFA tools is dependent upon the degree to which the salesperson perceives the SFA system to be useful to the performance of his/her sales job (i.e. PU_{sp}) and useful to sales management to measure and monitor sales activities (i.e. PU_{sm}).

While both PU_{sp} and PU_{sm} explain tool usage, one form of perceived usefulness should dominate (i.e. explain more variation in tool usage). If the salesperson seeks to increase customer response, then the salesperson's behavior (i.e. use of SFA tool) should be motivated by perceptions of how useful the tool will be in serving that purpose. Agency theory suggests that when the salesperson places emphasis on customer response PU_{sp} should be more influential than the salesperson's concerns about management (PU_{sm}). This is supported by the proposition (Eisenhardt, 1989) that low agent outcome uncertainty favors the use of outcome-based controls. In this case, exposure to a SFA tool designed to help the salesperson generate sales output, should reduce his uncertainty of whether sales goals can be met. Some findings in SFA research support this notion as studies have found differences in customer responses to various uses of SFA. For example, potential life insurance clients responded more favorably to the use of SFA when employed during the later phases of the sales interaction (Larpsiri and Speece, 2004). A salesperson typically has more frequent daily interactions with customers (than management) and one might expect perceptions of usefulness and actual tool use would follow this pattern.

Recognizing that sales behaviors (i.e. making sales calls, generating sales proposals, customer service activities) are activities and interim steps to making sales, salespeople will be open to using outcome-based SFA tools. However, this relationship is expected primarily when the salesperson

perceives the tool to be useful to him/her (PU_{sp}). While the salesperson may be aware the tool has the capacity to offer managerial analysis or oversight, this awareness will not be a major motivating factor in tool use. Thus the following relationship is suggested.

H_3. Salespeople's use of outcome-based SFA tools will be more influenced by the perceived usefulness to the salesperson (i.e. PU_{sp}) than the perceived usefulness to manager (i.e. PU_{sm}).

An agent's risk aversion is positively related to the use of behavior-based controls. In order to avoid the risks and punishment of non-compliant behavior, salespeople may use an activity-based SFA tool that they consider more useful to management (i.e. PU_{sm}). The sales manager believes these tools will be productive (Gohmann *et al.* 2005) and may justify asking salespeople to use them by compensating them, in part, with fixed salary. Because sales management place such high value on SFA tools and believes these tools will increase productivity, it is highly likely sales managers will communicate this to their subordinates. Those tools that are most managerially useful include those activity-based tools (since these tools include preparing call reports, analyzing territory competition, forecasting, and summarizing salesperson results) (Avlonitis and Panagopoulos, 2005, Widmier *et al.*, 2002). Salespeople may wish to avoid punishment (i.e. tend to be risk-averse) and thus may be more motivated by managerial pressure to use these activity-based tools.

H_4. Salespeople's use of activity-based SFA tools will be more influenced by the perceived usefulness to management (i.e. PU_{sm}) than the perceived usefulness to the salesperson (i.e. PU_{sp}).

Industry experience as moderator
Salesperson experience alters the predictive ability of perceived usefulness on explaining a user's intent (Venkatesh *et al.*, 2003). Precisely why this occurs is as yet unknown and one of the purposes of this study is to examine and test the explanations offered by agency theory. The salesperson's level of industry experience, according to agency theory, may increase his or her autonomy level. The salesperson with valued industry-specific experience has more employment mobility and thus is more likely to engage in agent like behavior. Previous studies in this stream of research show more experienced salespeople tend to be end-results oriented (Challagalla *et al.*, 2000). In fact, managers have been advised to shift emphasis from learning activities (for less experienced) to an emphasis on outcomes for the more experienced salespeople (Kohli *et al.*, 1998). Regardless of the emphasis on behaviors or results, salespeople tend to have longer tenure when they have control over the information used to make decisions as well as control over making those decisions (Brashear *et al.*, 2005). Both agency theory and research suggest experience levels are associated with an increased focus on serving the salespersons' needs - and resisting those of the sales manager.

The effect of experience levels should be pervasive and play a part in the link between perceived usefulness and the use of either activity-based or outcome-based tools. The experienced salesperson is using outcome-based tools largely based on their perceived usefulness to getting the sale – and will be

discouraged from using these same outcome-based tools if he or she feels their sales manager's purposes are being served. If it is the expectation of the more experienced salesperson that because of their tenure with the company, they should be trusted rather than monitored, perceived usefulness to management will decrease tool use. Activity-related tools fall clearly into this pattern since activity-based tools do not serve the immediate needs of customers (and are more managerially intended). Because the experience level of the salesperson affects their autonomy level, it may be highly likely the use of activity-based tools is used for self-management (rather than being monitored by others). Because we would expect experience level to favor perceived usefulness to salesperson and reject perceived usefulness to sales manager, the following hypotheses will be tested.

H_5. Experienced salespeople's use of outcome-based SFA tools will be:
· positively influenced by the perceived usefulness to the salesperson (i.e. PU_{sp}); and
· negatively influenced by the perceived usefulness to management (i.e. PU_{sm}).

H_6. Experienced salespeople's use of activity-based SFA tools will be:
· positively influenced by the perceived usefulness to the salesperson (i.e. PU_{sp}); and
· negatively influenced by the perceived usefulness to management (i.e. PU_{sm}).

To summarize the hypotheses developed in this section, Figure 1 illustrates a proposed model of the direct effects (of PU_{sp} and PU_{sm}) and the moderating effects (of salesperson experience) on the two types of SFA tools (outcome-based and activity-based).

Method

Sample
Surveys were mailed to 341 industrial salespeople employed by manufacturers located in a southeastern region of the USA. Using the American Business Directories database, each randomly selected small-to-medium sized manufacturer was solicited via a phone call. Each firm that agreed to participate was mailed an introductory cover letter (addressed to the sales executive contact person) and a packet of materials for each field salesperson employed by that firm. To assure confidentiality, responses were mailed directly to the

Figure 1 Proposed model of direct and moderating effects on SFA tool usage
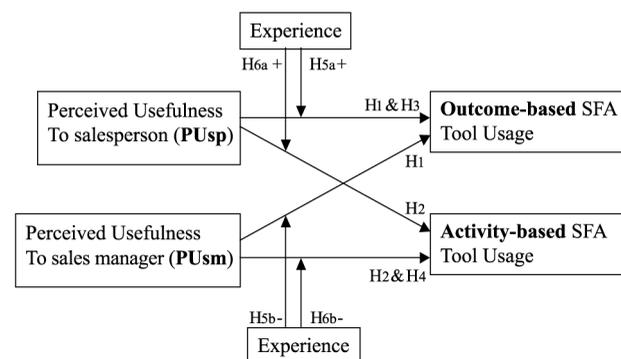
researchers' university address. A second reminder request was sent three weeks later (to nonrespondents only). For these analyses, this process yielded a total of 105 complete and usable responses. This usable response rate of 31 percent (105/341) compared favorably with similar studies (Dennis, 2003; Rivers and Dart, 1999).

Response bias was examined by comparing early to late respondents. No significant differences were uncovered in terms of any of the variables of interest. The average respondents tended to be college-educated males between 35 to 44 years old and on average were compensated using a combination of (fixed) salary and (variable) commission plan (see Table I for demographic profile of respondents).

Measures

To develop the tools that may be considered activity-based versus outcome-based tools, researchers first built on existing literature (both practitioner and academic) to generate a list of IT tools. Confirming this categorization, Widmier *et al.* (2002) found differences between the frequencies of using outcome-based tools (e.g. scheduling) over activity-based tools. Qualitative interviews with sales personnel (in five different industries such as the manufacturer of building materials, automotive components and precision tool cutting equipment) supported the face validity of the listed tools.

Three tools were selected to best represent outcome-based tools (e.g. laptop, scheduling and accessing the internet). Three tools were selected to best represent activity-based tools (e.g. external report generator, summary reports and

Table I Demographic profile of respondents

	(%)
Number of years of experience in current industry	
Less than five years	21
Five-ten years	21
11-16 years	15
17-22 years	16
23-28 years	14
29 or more years	13
Gender	
Male	71
Female	29
Education	
High school	15
Some college	37
College degree	42
Some graduate school	3
Graduate degree	3
Age	
Under 34 years	25
35-44 years	34
45-54 years	24
55-64 years	18
Compensation plan	
Salary only	38
Salary + commission	51
Commission only	11

sales forecasting). The final survey, therefore, asked respondents to estimate how long they had been using these six IT tools. The list of SFA tools included a random mix of both activity-based tools and outcome-based tools. Table II lists these tools in summary reporting form, not in the actual order used on the survey instrument.

Outcome-based tools included: laptop PC, scheduling software and internet access software. These tools are used in achieving sales outcomes such as providing timely customer information or making persuasive presentations (i.e. outcome-based tools). Tools used to monitor and manage these activities include external report generators or sales forecasting (i.e. activity-based tools). Thus each set of tools was operationalized as the summation of the time respondents estimated they had been using three tools. Because response categories were coded as zero for never up to eight for eight or more years, the possible range in values for either activity-based or outcome-based tools was zero (3×0) to 24 (3×8). Actual ranges of either tool was as low as zero and as high as 15. Specifically the average of outcome-based tools was 6.37 (standard error 0.39) and the average of activity-based tools was 4.03 (standard error of 0.35).

Results from a factor analyses implies two sets of tools may be distinct. Exploratory factor analyses (using principle component method) extracted a two-factor solution. Outcome-based tools (laptop, scheduling and internet access) loaded negatively on the first factor and positively on the second. The internal reliability for the three outcome-based tools was 0.69. The pattern of loadings for the three activity-based tools was less supportive (resulting in a lower average pairwise correlation of 0.58). These scale properties were cautiously considered in the reporting of the results. The fact that three tools load negatively on the second factor – and that these loadings are consistent with the conceptual expectations lends some credence to our activity-based versus outcome-based classification scheme. The properties of the second factor (activity-based tools), however, are not as strong as expected.

Our dependent variable, usage was measured by asking salespeople to estimate how long they used a particular tool in the performance of their current sales responsibilities. Longitudinal studies of IT use have shown that to get a meaningful indicator of technology use and adoption, superior measures reflect a span of time in using the tool (e.g. Szajna, 1996). The longer a tool has been in use, the more likely it is we can conclude the tool has been accepted.

Perceived usefulness to salesperson was measured using responses to three Likert statements describing the degree to which respondent believed the information system improved his or her selling effort or performance. Exploratory factor analyses of all six perceived usefulness items (three intended to measure usefulness to salesperson and three measuring usefulness to manager) extracted a two-factor solution. Further, the pattern of loadings is highly consistent with the concept of two different forms of usefulness. The three PU_{sp} unrotated items loaded heavily positive on the first factor and negative on the second factor. The pattern of the remaining three items may suggest the second factor extracted measures of the variability in PU_{sm}.

Internal reliability of the PU_{sp} scale was 0.91. PU_{sm} was measured using responses to three items describing the degree to which the respondent felt the information system was serving management's purpose of monitoring the field salesforce. The coefficient alpha for the PU_{sm} scale was

Table II Scale items: use of SFA tool and perceived SFA system usefulness

These items were framed by asking salespeople to estimate how long they used the listed item in the performance of their current sales responsibilities		
Outcome-based tools	Laptop PC Scheduling of appointments, tasks or meetings Access internet services	Response categories, never (coded as 0)
Activity-based tools	External report generator (e.g. Crystal 7.0 or 8.5) Generate summary reports of sales activities Sales forecasting	One year or less (coded as 1) Two to three years (2) Four to five years (4) Six to seven years (6) Eight years (8)
Perceived usefulness measures		
PU_{SP} perceived useful to sales person	Information from my company's sales automation systems is provided to me so I can determine how best to perform my job Feedback from my company's sales automation systems provides me the information needed so I can manage my selling effort Information collected and maintained in my company's sales automation systems allows me to do my job better	Seven point agree-disagree response ratings
PU_{SM} perceived useful to management	Information collected and maintained in my company's sales automation system is for the benefit of my management Information collected and maintained in my company's sales automation system is used to monitor my selling effort Feedback from my company's sales automation systems is used more by management to monitor me than to provide me with information	

0.71 and exceeded the adequate level of reliability recommended by Nunnally and Bernstein (1994). Overall the average pairwise correlation of the three items in each scale implies acceptable levels of internal reliability and the low correlation between these two measures of 0.1577 indicates discriminate validity.

Experience was measured by the number of years the respondent had been employed in the current industry in which he or she held a sales position. A cross-classification of experience levels with the type of customer served (intermediary, manufacturer or service providers) indicates experience levels vary widely across different selling situations.

Analyses

Regression analyses were used to test each hypothesis. If the combination of predictor variables (i.e. PU_{sp} and PU_{sm}) was significant (i.e. testing H_1 and H_2) then the comparison of beta-weights for each of these variables indicated the relative strength of one over the other (i.e. testing H_3 and H_4). A comparison of a set of regression models was used to identify a pure moderator (i.e. testing H_5 and H_6). This series of regression models helps rule out the possibility that experience is acting as a quasi-moderator (i.e. having a direct predictive effect on tool use as well as interacting with perceived usefulness).

Results

The first set of regression models examines the effect of PU_{sp} and PU_{sm} on tool use. One model examined the effect of both forms of perceived usefulness on outcome-based tool use and

one model examined the effect on activity-based tool use. Both models were significant with F-values of 5.67 and 8.55 (for outcome-based and activity-based tools respectively). In the case of outcome-based tools this combination of perceived usefulness variables explained 9.9 percent of the variation in use (see Table III for outcome-based tool results). This same combination of variables (i.e. PU_{sp} and PU_{sm}) explained 15.11 percent of the variation in use of activity-based tools (see Table IV for activity-based tool results). Thus H_1 and H_2 are supported. Tool use (either outcome-based or activity-based) is a function of both forms of perceived usefulness (i.e. PU_{sp} and PU_{sm}). The ability to explain this proportion of variance in duration of use in this heterogeneous sample compares favorably to similar studies (Johnson and Bharadwaj, 2005; Schillewaert *et al.*, 2005).

While the overall model explains significant variability, beta-weights indicate one form of perceived usefulness is significant and one is not. As expected PU_{sp} is significant in predicting the variability of outcome-based tools but PU_{sm} is not (see Table III). The standardized beta weight for PU_{sp} was 0.2476 with an associated p-value less than 0.01. Thus H_3 is supported. This is especially important given the strong scale properties of the items measuring outcome-based tools. When the salesperson believes the tool will be useful in meeting the needs of satisfying his or her customers and getting sales results, the salesperson is more likely to use laptop, scheduling, or internet services – and to use these tools over a longer period of time.

Contrary to expectations, however, this same pattern was applicable to the use of activity-based tools. The standardized beta weight for PU_{sp} was .2649 with an associated p-value of less than 0.001 in predicting activity-based tool use (see Table

Table III Use of outcome-based tools

	Main effects (reduced model)		Main effects (with experience)		Main and interactions (full model)	
	β stdzd	t-value	β stdzd	t-value	β stdzd	t-value
Constant	–	1.27	–	0.74	–	−1.78
PU_{SP}	0.2476	2.97**	0.2548	3.04**	0.3173	1.88
PU_{SM}	0.0992	0.98	0.0968	0.96	0.6253	2.78**
EXP			0.2011	0.88	2.7257	2.52*
EXP*PU_{SP}					−0.0192	−0.41
EXP*PU_{SM}					−0.1621	−2.62*
R^2	0.0992		0.1059		0.1638	
F-stat	5.67**		4.03**		3.92**	
Df	2,103		3,102		5,100	
Comparison	Δ_1		Δ_2		Δ_3	
	$\Delta_1 R^2 + 0.0068$		$\Delta_2 R^2 + 0.0578$		$\Delta_3 R^2 + 0.0646$	
F-stat	0.77		6.92***		7.73***	
Df	1,102		1,100		1,100	
Test for pure moderator	Yes (NS)		Yes (S)		Yes (S)	

Notes: $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$. Δ_1 compares main effect (reduced) to main effects (with moderator); Δ_2 compares main effects (with moderator) to main and interaction (full model); Δ_3 compares main effect (reduced) to main and interaction (full model); pure moderator exists when all three conditions are met: (1) Δ_1 not significant; (2) Δ_2 significant; (3) Δ_3 significant

Table IV Use of activity-based tools

	Main effects (reduced model)		Main effects (with experience)		Main and interactions (full model)	
	β stdzd	t-value	β stdzd	t-value	β stdzd	t-value
Constant	–	−0.26	–	−0.54	–	−0.84
PU_{SP}	0.2649	3.74***	0.2684	3.78***	0.2420	1.73
PU_{SM}	0.0841	0.96	0.0798	0.91	0.2181	1.23
EXP			0.1506	0.76	0.7215	0.82
EXP*PU_{SP}					0.0077	0.19
EXP*PU_{SM}					−0.0471	−0.90
R^2	0.1512		0.1563		0.1638	
F-stat	8.55**		5.87**		3.64**	
Df	2.96		3,95		5,93	
Comparison	Δ_1		Δ_2		Δ_3	
	$\Delta_1 R^2 + 0.0051$		$\Delta_2 R^2 + 0.0075$		$\Delta_3 R^2 + 0.0126$	
F-stat	0.58		0.83		1.41	
Df	1,95		1,93		1,93	
Test for pure moderator	Yes (NS)		No (NS)		No (NS)	

Notes: $^*p < 0.05$; $^{**}p < 0.01$; $^{***}p < 0.001$. Δ_1 compares main effect (reduced) to main effects (with moderator); Δ_2 compares main effects (with moderator) to main and interaction (full model); Δ_3 compares main effect (reduced) to main and interaction (full model); pure moderator exists when all three conditions are met: (1) Δ_1 not significant; (2) Δ_2 significant; (3) Δ_3 significant

IV). PU_{sm} was not significant in predicting the duration of use of activity-based tools (Standardized Beta of 0.0841). This result implies PU_{sp} (and not PU_{sm}) explains the majority of variation in activity-based tool use. H_4 is not supported. In part this lack of significance may be due to the weaker scale properties of the activity-based tool measure.

To provide a stringent test of industry experience to act as a pure moderator, a series of regression models were compared. The models consisted of:

- main effects of PU_{sp} and PU_{sm} only;
- main effects of PU_{sp}, PU_{sm} and moderator variable; and
- main effects of all variables and interaction terms).

A pure moderator exists when the second model (testing the main or predictive effect of the moderator) does not substantially increase the variance explained over the main model without the moderator (i.e. Compared Reduced Model to quasi-moderator model). When, however, comparisons of the full model to all other models are significant then a pure moderator exists (Baron and Kenny, 1986; Irwin and McClelland, 2001; Sharma *et al.*, 1981).

In the explanation of outcome-based tools, experience met all these statistical requirements. The full model provided a statistically significant improvement over all other models. The F-statistic of 6.92 indicates the full model explains more

variability than the model of main effects of PU_{sp}, PU_{sm} and experience (see Δ_2 in Table III). Similarly the F-statistic of 7.73 indicates the full model explains more variability than reduced main effects model (see Δ_3 in Table III). In order to rule out the possibility that experience acts as a quasi-moderator (i.e. both predicts tool use and interacts with perceived usefulness) we compared the full model (with all main effects and interaction terms) to two other models (one with main effects of just PU_{sp} and PU_{sm} and one with main effects of experience, PU_{sp} and PU_{sm}). Experience as a moderator met all these tests; no significant difference in main effects were detected (see Δ_1 in Table III, F-value of 0.77). The significant beta weight of the interaction term (PU_{sm} *Exp) is negative (-0.1621). In support of H_{5b}, the effect of PU_{sm} on outcome-based tool use decreases with higher levels of industry experience. Experience moderates the effect of perceived usefulness in explaining outcome-based tool use and does so in the direction hypothesized. This may imply support for H_5. The same pattern did not extend to activity-based tools (see Table IV). An overall lack of support of H_6 was indicated by non-significant results of H_{6a} and H_{6b}. Once again, these differential results may be due to the properties of the activity-based tool measure.

Experience interacts with PU_{sm} rather than PU_{sp} in explaining variability in outcome-based IT tool use (i.e. H_5). PU_{sp} alone as a main effect was significant in explaining IT tool use but the inclusion of experience as a moderator appears to diminish PU_{sp}. This analysis suggests PU_{sm} is important when we consider the level of experience. When the more (less) experienced salesperson believes the SFA system is providing high (low) levels of usefulness to managers then he or she is less (more) likely to use outcome-based tools.

Discussion

Salespeople will use SFA tools based on the degree to which they perceive the tools to be useful to help them perform their selling job. The dominance of perceived usefulness to the salesperson as an explanatory factor for SFA usage is consistent with agency theory (which suggests that agents will favor minimizing outcome uncertainty). When we consider the main effects of either form of perceived usefulness it is the salesperson's self- interest that emerges as a motivator. When firms are persuasive in showing salespeople a SFA tool can meet their immediate customer related needs, salespeople are more likely to use the tool. Furthermore, while salespeople recognize managers' need for information and comply with requests to use such (activity-based) SFA tools, this is not a major motivating factor in usage of such tools. When, however, we include the effect of experience we find it is the combination of experience and PU_{sm} that explains variability in SFA tool use. Others affirm these results and recommendations. For example, Bush et al's (2005) interviews with firms, which had implemented SFA, conclude it is the user's articulated goals (rather than the managers' articulated goals) that are important. As for experience, Ko and Dennis (2004) found that highly experienced salespeople gained the least benefits from SFA use. Consistent with these findings, we found perceived usefulness to manager's purposes gained significance. As the more experienced salespeople perceived high levels of PU_{sm}, they used outcome-based tools less. These findings are explainable by the agency-principal dichotomy of agency

theory, which posits that the length of the agency relationship is negatively related to the use of outcome-based control and positively related to the use of behavior-based control. What we found is that this holds true primarily when the salesperson perceives the outcome-based control system (i.e. the SFA tool) to be useful to sales management. Specifically, experience acts as a moderator to change the predictive effect of perceived usefulness to the salesperson, increases the main effect of perceived usefulness to the manager, and finally the combined effect of both experience and managerial usefulness reduces the likelihood of outcome-based tool use. Thus the results of these studies together with ours serve to provide researchers additional insight into factors that impact SFA tool usage.

Managerial implications

The results of this study have several important implications for sales managers. First, exposure to SFA tools designed to the salesperson's need to generate sales output should impact usage more than exposure to those serving managers' need for reporting and tracking. Apparently, adoption is driven by a salesperson's desire for more productivity, not from a desire to "manage-upward". This important finding suggests that if firms are to maximize their investment in salesforce automation, a sound strategy is needed to design tools with an eye on helping salespeople achieve their goals. One way to implement this strategy is to have a representative sample of salespeople serve as members of the SFA design team. This should assure that salesperson interests are taken into account as the SFA tool is being developed. A second implication is that managers must be persuasive in showing salespeople how a SFA tool can meet their immediate customer related needs. This can be accomplished through communication, training, and hands-on demonstration of how the SFA tools can help salespeople manage their resources. A third implication is that managers should seek to increase salesperson "buy in" to using SFA tools by continually asking for feedback on the usefulness of the tool(s) as well as how subsequent versions of the tool can be improved. Research has shown that involving salespeople in this planning and feedback process can help ensure long-term SFA tool success (Colombo, 1994).

Additional insight offered to the practicing manager is that as the more experienced salespeople perceive high levels of PU_{sm}, they used outcome-based tools less. This suggests that experienced salespeople may view using the SFA tool as more of a burden than an outcome enhancer. The rationale for this is that over time, a more experienced salesperson may become less reliant on formal means of (customer) communication. For example, the tenure of these (salesperson – customer) relationships may facilitate an informal phone conversation, face-to-face conversation, or less formalized sales proposal to complete a sales transaction. Managers must understand and selectively consider supporting this position (by not requiring the use of SFA tool) especially if the experienced salesperson is a top performer. From this study, managers should take away the notion that it is not just a global perception of SFA tool usefulness that is important but the degree to which the salesperson sees the tool as useful to his or her productivity. In addition, this study suggests to managers that their influence over the salesperson's use of SFA tools may not be as important as the perceived usefulness to the salesperson himself.

Theoretical implications, limitations, and further research

The theoretical implications of this research suggest that our results are somewhat consistent with the principal-agent stream of research (i.e. agency theory) that suggests that:

- the most efficient contract alternative should be chosen based on whether outcomes or behaviors are the goal; and
- outcome uncertainty is a significant predictor of the type of controls used (Eisenhardt, 1985, 1989).

Salespeople in an attempt to reduce uncertainty relative to achieving their goals will use SFA tools that they perceive as useful. The significant and consistent results concerning outcome-based tools suggest additional research concerning activity-based tool scale properties may be worthwhile. Our scale development work suggests there are divergent patterns in how salespeople use the various SFA tools. Agency theory (and the analyses performed here) suggests this pattern may be dichotomous. This suggestion, however, received weak support (i.e. the internal reliability of the activity-based tool measure). Validating these measures on a new data set may well be worth the effort, given our initial findings offered here.

Additionally a promising line of research effort may rest with measuring salesperson experience. Since experience was measured by the number of years the respondent had been employed in the current industry in which he or she held a sales position, it is certainly possible that a respondent's sales experience could be less than their industry experience. If this is the case, then our measure of industry experience may be including inside sales, technical applications, production or distribution functions the respondent may have within the same industry. However, since SFA systems support all of these functions, perhaps this wider functional exposure is important.

Since usage of SFA is such an important topic to sales researchers and managers (SFA deployment is expensive and failures have reached an alarming rate), additional research may explore the causal relationship between perceived usefulness (dependent variable) and SFA tool usage (independent variable). Because SFA is becoming less of a novelty and more common, the degree to which a salesperson is familiar, competent and has previous SFA tool experience may suggest actual use predicts perceptions of the tool. Such an extension could provide insight into what factors contribute to more positive usefulness perceptions of SFA among salespeople.

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Corresponding author

Michael L. Mallin can be contacted at: Michael.mallin@utoledo.edu

Executive summary and implications for managers and executives

This summary has been provided to allow managers and executives a rapid appreciation of the content of the article. Those with a particular interest in the topic covered may then read the article in toto *to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefit of the material present.*

It was while his country faced its darkest hour that Winston Churchill said "Give us the tools and we will finish the job" yet it's a quotation which has ever since been borrowed for all sorts of less-daunting situations.

If getting their salespeople to fight a metaphoric war with the opposition seems a matter of life and death to managements at times, their battle cry might be more along the lines of: "We'll give them the tools but can we be sure they'll use them?"

Some estimates suggest that failure rates on achieving return on investment for new technologies deployed to sales forces could be an alarming 60-75 per cent. Industrial salespeople take advantage of some forms of information technology and reject others. For example, desktop computing has achieved a high level of use, but the acceptance of more mobile forms is lagging. Even those who use laptops tend to do so without integrating dynamic analytical forms of software.

Given the trend towards increasing investments in more sophisticated forms of technology to help salespeople and sales managers do their jobs, the possibilities of employees not getting the best use out of them is problematic, to say the least.

In their study of the acceptance and rejection of aspects of sales force automation (SFA), Michael L. Mallin and Susan K. DelVecchio say that when firms are persuasive in showing salespeople an SFA tool can meet their immediate customer-related needs, they are more likely to use it. However, while salespeople recognize managers' need for information and comply with requests to use tools which help them monitor selling activities and behaviors, this is not a major motivating factor in their usage.

The salesperson's behavior is influenced both by his or her need for autonomy and the sales manager's need for control. So the actual usage of an IT tool can be predicted based on whom the salesperson perceives its usefulness benefit. Since the field salesperson serves more than one purpose, is answerable to multiple constituents (e.g. customer, self, sales manager), and typically are compensated using a combination of (fixed) salary and (variable) commission, they are likely to perceive more than one form of SFA tool usefulness. Salespeople will use SFA tools based on the degree to which they perceive the tools to be useful to help them perform their selling job. The salesperson's self-interest is the motivator.

Consequently, as was found in the study, exposure to SFA tools designed to the salesperson's need to generate sales output should impact usage more than exposure to those serving managers' need for reporting and tracking. Adoption seems to be driven by a salesperson's desire for more productivity, not from a desire to "manage-upward". This important finding suggests that if firms are to maximize their investment in sales force automation, a sound strategy is needed to design tools with an eye on helping salespeople achieve their goals. One way to implement this strategy is to have a representative sample of salespeople serve as members of the SFA design team. This should assure that salesperson interests are taken into account as the SFA tool is being developed.

It is also important that managers be persuasive in showing salespeople how a SFA tool can meet their immediate customer-related needs. This can be accomplished through communication, training, and hands-on demonstration of how the SFA tools can help salespeople manage their resources. Managers should also seek to increase salesperson "buy in" to using SFA tools by continually asking for feedback on the usefulness of the tool(s) as well as how subsequent versions of the tool can be improved. Involving salespeople in this planning and feedback process can help ensure long-term SFA tool success.

As the more experienced salespeople perceive high levels of usage to their management, they use the tools intended to help them in their selling task less. This suggests that experienced salespeople may view using the SFA tool as more of a burden than an outcome enhancer. The rationale for this is that, over time, a more experienced salesperson may become less reliant on formal means of (customer) communication. For example, the tenure of these salesperson-customer relationships may facilitate an informal phone conversation, face-to-face conversation, or less formalized sales proposal to complete a sales transaction.

Managers must understand and selectively consider supporting this position (by not requiring the use of SFA tool) especially if the experienced salesperson is a top performer. From this study, managers should take away the notion that it is not just a global perception of SFA tool usefulness that is important but the degree to which the salesperson sees the tool as useful to his or her productivity. In addition, the study suggests to managers that their influence over the salesperson's use of SFA tools may not be as important as the perceived usefulness to the salesperson himself.

(A précis of the article "Salesforce automation tool selectivity: an agency theory perspective". Supplied by Marketing Consultants for Emerald.)