



MONTCLAIR STATE
UNIVERSITY

Montclair State University
**Montclair State University Digital
Commons**

Department of Marketing Faculty Scholarship
and Creative Works

Department of Marketing

1-1-2014

Does Information and Communication Technology Improve Job Satisfaction? The Moderating Role of Sales Technology Orientation

Yam Limbu

Montclair State University, limbuy@mail.montclair.edu

C Jayachandran

Montclair State University, jayachandrc@montclair.edu

Barry J. Babin

Louisiana Tech University

Follow this and additional works at: <https://digitalcommons.montclair.edu/marketing-facpubs>



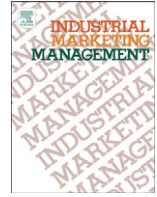
Part of the [Marketing Commons](#)

MSU Digital Commons Citation

Limbu, Yam; Jayachandran, C; and Babin, Barry J., "Does Information and Communication Technology Improve Job Satisfaction? The Moderating Role of Sales Technology Orientation" (2014). *Department of Marketing Faculty Scholarship and Creative Works*. 183.

<https://digitalcommons.montclair.edu/marketing-facpubs/183>

This Article is brought to you for free and open access by the Department of Marketing at Montclair State University Digital Commons. It has been accepted for inclusion in Department of Marketing Faculty Scholarship and Creative Works by an authorized administrator of Montclair State University Digital Commons. For more information, please contact digitalcommons@montclair.edu.



Does information and communication technology improve job satisfaction? The moderating role of sales technology orientation



Yam B. Limbu ^{a,*}, C. Jayachandran ^{b,1}, Barry J. Babin ^{c,2}

^a Department of Marketing, School of Business, Montclair State University, 1 Normal Ave., Montclair, NJ 07043, USA

^b Center for International Business, Department of Marketing, School of Business, Montclair State University, 1 Normal Ave., Montclair, NJ 07043, USA

^c Marketing & Analysis Department, Louisiana Tech University, Ruston, LA 71272, USA

ARTICLE INFO

Article history:

Received 20 October 2012

Received in revised form 13 May 2013

Accepted 9 January 2014

Available online 12 July 2014

Keywords:

Information and communication technology

Job satisfaction

Administrative performance

Outcome performance

Technology orientation

ABSTRACT

Empirical research concerning the role of information and communication technology (ICT) in shaping business-to-business salesforce job satisfaction remains relatively scarce. The authors propose and empirically test a causal model that theoretically represents structural relationships among factors comprising ICT and eventual salesperson job satisfaction. Study results indicate that ICT indirectly influences job satisfaction through salesforce administrative performance. While ICT infrastructure, training, and support positively relate to administrative performance, none of them influence outcome performance significantly. In addition, salesperson technology orientation moderates the effect of both ICT infrastructure and support on job satisfaction. Managerial insights and implications from the research are discussed.

Published by Elsevier Inc.

1. Introduction

Firms continue to invest substantial resources in information and communication technology (ICT) infrastructure, training, and support with the hope of enhancing the capabilities of their salesforce. Modern technology augments business-to-business (B2B) salesforce activities with better ICTs than ever before. Information technology is fundamental to a firm's growth and represents a primary tool for enhancing B2B salesforce performance. Research shows that communication technologies enhance salesforce activities including employing market intelligence, managing their customer contacts, submitting sales call reports, and developing sales forecasts (Gohmann, Guan, Barker, & Faulds, 2005). While the sales literature contains a fair amount of research on adoption and usage of information technology applications, the role that ICTs play in shaping salesperson job satisfaction remains understudied.

The current study presents unique contributions to sales technology literature in four distinct ways. First, an extensive literature provides evidence concerning sales technologies including salesforce automation (SFA) and customer relationship management (CRM). SFA involves the

use of computer hardware and software applications to convert manual sales activities to electronic processes (Erffmeyer & Johnson, 2001; Rivers & Dart, 1999). CRM uses technology to manage customer interactions and transactions (Zoltners, Sinha, & Zoltners, 2001). However, Hunter and Perreault (2006) and Marshall, Moncrief, Rudd, and Lee (2012) argue that today's salespeople use a wide range of technologies that may go beyond the classification as either CRM or SFA. Therefore, Hunter and Perreault (2006; 2007) coin the term *sales technology* (ST) as a broader concept including all information technologies salespeople use in performing the selling function. However, this definition does not explicitly describe just what all the various technologies might be. Similarly, others (Erffmeyer & Johnson, 2001; Honeycutt, 2005) argue that SFA refers to different things to different people or firms. For example, one organization may deem a tablet computer as an SFA tool, but another may not. These definitions focus on "information technologies" and do not address the more general case of "communication technologies."

In practice, communication technologies are critical in B2B selling environments. Today, the professional salesperson has at his or her disposal a range of communication devices and applications including tablet computer/smartphone apps, blogs, wikis, social media networking sites, data warehouses, and various near-field communication capabilities. Hence, the present generation of salespeople employs a variety of communication technologies including social media and mobile Internet technology that go beyond the traditional boundaries of CRM, SFA, and ST (Hunter & Perreault, 2006; Marshall et al., 2012). For example, pharmaceutical sales representatives are currently practicing e-detailing,

* Corresponding author. Tel.: +1 973 655 3361; fax: +1 973 655 7673.

E-mail addresses: limbuy@mail.montclair.edu (Y.B. Limbu),

jayachandrc@mail.montclair.edu (C. Jayachandran), bbabin@latech.edu (B.J. Babin).

¹ Tel.: +1 973 655 7523.

² Tel.: +1 318 257 4012.

which uses a rich variety of new and intricate ICTs, including electronic video conferencing, interactive voice response, online video presentations, and social media (Alkhateeb & Doucette, 2008).

Our study takes a holistic approach in understanding the role of ICT on salesforce performance and job satisfaction. ICT is a well-defined and widely used construct in the information system literature and encompasses computer and communication technologies, shareable technical platforms and databases, networking technologies, broadcast media, and audio and video processing and transmission (Chung & Hossain, 2010; Davenport, Hammer, & Metsisto, 1989; Ross, Beath, & Goodhue, 1996; Schaper & Pervan, 2007; Weill, Broadbent, & Butler, 1996). Because ICT plays an important role in any organization and the use of novel and sophisticated ICTs continue to emerge in B2B selling, it is undoubtedly an important topic that deserves sales researchers' attention. Researchers indeed call for more substantive research dealing with sales ICT practice and its effectiveness (Brady, Fellenz, & Brookes, 2008; Marshall et al., 2012).

Second, the study explores the effects of previously untapped constructs related to ICT such as a firm's ICT infrastructure and support. As a firm's investment in sales ICTs continues to grow especially in B2B industries, the use of ICTs has become an integral part of a salesperson's daily routine. A firm's investment in ICT can influence sales performance and job satisfaction. However, any such influence is likely moderated by salesperson technology orientation. Therefore, the study sheds light on the efficacy of salesforce ability and propensity to use ICTs as a driving force of job satisfaction. Given that salesforce turnover can be very costly and poses a serious challenge to B2B firms, understanding the influence of ICT and firms' job enrichment efforts such as technology infrastructure and support on salesforce job satisfaction and retention has become crucial to firms' ability to sustain sales performance.

Third, previous research relies primarily on sales volume (in units or dollars) as a principal indicator of salesperson performance (e.g., Ahearne, Hughes, & Schillewaert, 2007; Ahearne, Jones, Rapp, & Mathieu, 2008; Morris, Davis, Allen, Avila, & Chapman, 1991). Lately, research suggests two key dimensions of salesperson performance: administrative performance (nonselling performance or sales-related administrative performance such as call planning and reporting) and outcome performance (selling performance such as generating sales volume and sales revenue) (e.g., Baldauf, Cravens, & Piercy, 2005; Sundaram, Schwarz, Jones, & Chin, 2007). To date, little is known about the differential antecedents and outcomes of the two performance dimensions. Sundaram et al. (2007) underline the importance of salesperson administrative performance and emphasize a need for further research into the effects of sales technology on the different dimensions of sales performance. Thus, the current study addresses this issue.

Finally, despite decades of research, the relationship between job performance and job satisfaction remains a topic of ongoing controversy. Extant literature offers two opposite points of view concerning this relationship (i.e., job satisfaction leads to job performance or job performance leads to job satisfaction). Over the last few decades, researchers gravitated toward the view that job performance exhibits a weak but positive relationship with job satisfaction (e.g., Brown & Peterson, 1993, 1994). In light of such conflicting findings regarding the performance–satisfaction relationship, the secondary goal of our study is to examine whether different dimensions of job performance (e.g., administrative and outcome) have different impacts on job satisfaction.

2. Literature review

Prior research on salesforce technology in B2B personal selling can be grouped into three streams. As shown in Table 1, extant research focuses on SFA (e.g., Erffmeyer & Johnson, 2001; Rivers & Dart, 1999). These studies report a strong impact of SFA on sales performance (e.g., Jelinek et al., 2006; Ko & Dennis, 2004) and sales

productivity through better account prospecting, development, and buyer profiling (Pullig, Maxham, & Hair, 2002). The second cluster of studies investigates the efficacy of sales-based CRM (e.g., Ahearne et al., 2007; Zoltners et al., 2001) and its impact on salesperson performance (e.g., Ahearne et al., 2004; Ahearne et al., 2008) and call productivity (Ahearne et al., 2007). The third line of research introduces the term *sales technology*, which includes a range of information technologies meant to facilitate or enable performance of sales tasks (Hunter & Perreault, 2006; 2007). The studies suggest a direct impact of sales technology on internal role performance and an indirect effect on performance with customers.

Most sales research studies rely on a narrow concept of sales technology with a focus on a specific sales technology package and its impact on sales effectiveness. However, not all B2B salespersons access and use such information technology resources (e.g., SFA and CRM). Rather, in most cases, firms install and maintain a common set of ICTs that are used by employees, including the salesforce. Considering the crucial role of ICTs in B2B selling, it is critical to have a general understanding of the holistic contribution of ICT to salesforce performance and job satisfaction.

3. Proposed model and hypotheses

The proposed causal model (see Fig. 1) is grounded in several bodies of knowledge. These include the *social exchange theory*, which assumes that human behavior is an exchange of rewards between actors; the *job characteristics model* of work motivation, which illustrates the potential impact of job characteristics on job outcomes; and the *balance theory*, which is a psychological theory that highlights the desire for consistency. Fig. 1 posits relationships between three ICT-related exogenous constructs (i.e., infrastructure, training, and support) and three endogenous constructs (i.e., administrative performance, outcome performance, and job satisfaction). ICT factors exert direct and indirect effects on job satisfaction through administrative performance and outcome performance. Furthermore, technology orientation moderates the relationship between ICT factors and job satisfaction.

In this study, ICT *infrastructure* is defined as a salesperson's perceptions of a firm's investment in sales-related ICT resources including hardware, software, staffing, and sophisticated Internet applications. ICT *training* refers to the extent to which salespeople believe that they receive sufficient sales-related ICT training to use ICT tools. ICT *support* involves a salesperson's perceptions regarding the firm's provision of inputs that are needed to engage in the efficient use of ICT resources. Support may include the availability of specialized personnel manning a help desk, an information center to answer users' questions regarding ICT usage, troubleshooting capabilities, and hands-on support to users before and during usage (Bhattacharjee & Hikmet, 2008). In line with Sundaram et al. (2007), we define *administrative performance* as the extent to which ICTs affect the quality of salesperson planning, time management, and reporting. "Submitting required reports on time" is an example of salesperson administrative performance (Hunter & Perreault, 2007). *Outcome performance* refers to "the extent to which the technology affects the quality of the salesperson's ability to produce key sales results" (Sundaram et al., 2007, p. 111) and represents quantitative results of the salesperson's efforts (Baldauf et al., 2005). In this study, *technology orientation* is defined as a salesperson's propensity and analytical skills needed to use firm-specific ICTs in performing sales tasks (Hunter & Perreault, 2006).

3.1. Impact of ICT factors on salesperson performance and Job satisfaction

Job satisfaction represents an individual's psychological well-being on the job (Singh, Goolsby, & Rhoads, 1994). Various models propose, test, and try to explain the impact of job design on employee job satisfaction. For example, Hackman and Oldham's (1976) job characteristics model (JCM) suggests that various job characteristics (e.g., skill variety

Table 1
Review of major empirical models in the sales technology literature.

Authors	Sales technology	Exogenous variables	Endogenous variables
Speier & Venkatesh (2002)	SFA	Individual traits, role perceptions, organization characteristics, professional state	Individual perceptions of technology, person–technology fit, subjective outcomes, objectives
Jones, Sundaram, & Chin (2002)	SFA, TAM ^a	Salesperson attitudes and characteristics, normative and control beliefs	Infusion, intention to use
Ko & Dennis (2004)	SFA	System usage, experience, expertise	Sales performance
Ahearne, Jelinek, & Rapp (2005)	SFA	Usage	Salesperson performance
Rangarajan, Jones, & Chin (2005)	SFA	Task complexity, perceived usefulness	Role ambiguity, role conflict, effort, infusion
Schillewaert, Ahearne, Frambach, & Moenaer (2005)	SFA, TAM	Social influence, salesperson characteristics, organizational facilitators, subjective social norm	Usefulness, ease of use, usage
Jelinek, Ahearne, Mathieu, & Schillewaert (2006)	SFA	Individual differences, organizational factors, contextual influences	Intention to adopt, adaptation, sales performance
Park, Kim, Dubinsky, & Lee (2010)	SFA	Usage	Information proceeding, adaptive selling behavior, sales performance, relationship quality
Eggert & Serdaroglu (2011)	SFA	Supervisor support, facilitating conditions	Technology usage, sales performance
Ahearne et al. (2007)	CRM	Acceptance	Sales performance
Ahearne, Srinivasan, & Weinstein (2004)	CRM	Usage	Sales performance
Sundaram et al. (2007)	SFA, CRM	Prior attitude toward information technology	Prior intention to use, routinization, infusion, sales performance
Rapp, Agnihotri, & Forbes (2008)	SFA, CRM	Usage, experience	Effort, adaptive selling, sales performance
Hunter & Perreault (2006)	ST	Internal technology support, customer approval, sales experience	Sales technology orientation, information effectiveness, planning, adaptive selling behaviors, salesperson performance
Hunter & Perreault (2007)	ST	Training, customer's information technology expectations	Usage, relationship-forging tasks, sales performance
Mathieu, Ahearne, & Taylor (2007)	ST	Work experience, leader commitment, empowering leadership	Self-efficacy, usage, sales performance
Ahearne et al. (2008)	ST	Usage	Sales performance
Onyemah, Swain, & Hanna (2010)	ST	Perceived technological savvy of sales manager, coworkers, and competitors	Perceived monitoring of salesperson's activities, technology usage, sales performance
Lapierre & Denier (2005)	ICT	Organizational culture, change processes, control system, managerial style	ICT adoption, communication effectiveness
Robinson, Marshall, & Stamps (2005a)	TAM	Perceived control, length of work experience, personal innovativeness, support services, organizational innovativeness	Perceived ease of use, perceived usefulness, attitude, behavioral intention
Robinson, Marshall, & Stamps (2005b)	TAM	Perceived usefulness, perceived ease of use	Attitude, behavioral intentions, adaptive selling, job performance
Shim & Viswanathan (2007)	TAM	System features	Perceived ease of use, perceived usefulness

^a TAM refers to technology acceptance model.

and task significance) influence job satisfaction through psychological states including feelings of meaningfulness and responsibility. The proposition that perceived job characteristics influence perceptual processes, motivation, work performance, and job satisfaction is well researched in organizational literature (Glisson & Durick, 1988; Loher, Noe, Moeller, & Fitzgerald, 1985; Thatcher, Stepina, & Boyle, 2002;

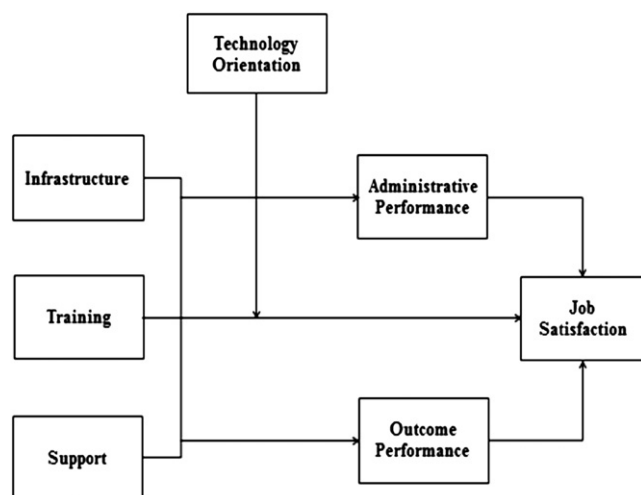


Fig. 1. Conceptual framework of information and communication technology and job satisfaction.

Ting, 1997). Job enrichment efforts include firms' endeavors to make the jobs more interesting, challenging, and significant by adding dimensions such as variety, autonomy, feedback, and control (Umstot, Bell, & Mitchell, 1976). Job enrichment is deemed to improve job satisfaction by providing greater capabilities for employee achievement, growth, and recognition (Loher et al., 1985; Neuman, Edwards, & Raju, 1989).

The current study focuses on ICT-related job characteristics or enrichment efforts that influence job satisfaction. The study proposes that a firm's investment in ICT infrastructure, training, and support favorably influences salesforce perceptions of enrichment efforts and organizational backing. In turn, these factors eventually influence salesperson motivation and job satisfaction. Such corporate decisions are generally based on the rationale that a salesperson's perceptions of firm commitment and continuous assistance rendered to perform the tasks directly influence the way they perform and feel about their job.

Prior research relying on a resource-based view of information technology suggests that investment in information technology resources relates positively to a firm's success (Bharadwaj, 2000; Keen, 1991; McKenney, 1995). This suggests that firms can enhance salesforce productivity by improving salesforce-oriented ICT infrastructure. Another line of literature suggests that the extent of skills utilization (i.e., the degree to which jobs allow individuals to use their skills and abilities) is a strong predictor of job satisfaction (Gerhart, 1987; Glisson & Durick, 1988). Since an effective use of ICT involves skills, one can argue that a firm's investment in ICT resources has a positive influence on employee job satisfaction. Theoretically, social exchange theory holds that an individual is likely to reciprocate with a positive attitude and behavior when the individual receives positive inducements from

others (Blau, 1983; Gouldner, 1960). The theory puts forward that all human relationships are based on a subjective cost–benefit analysis and the comparison of alternatives (Hormans, 1958). In a workplace setting, social exchange relationships are likely to take place when employers take care of employees and promote effective work behavior and positive employee attitudes (Cropanzano & Mitchell, 2005). Applying this theory in a personal selling context, one would expect a firm's investment in salesforce job enrichment to be a significant determinant of salespersons' psychological outcomes (e.g., affective reaction toward one's job). Thus, this study predicts the following:

H1a. Infrastructure investment relates positively to job satisfaction.

H1b. Infrastructure investment relates positively to administrative performance.

H1c. Infrastructure investment relates positively to outcome performance.

Previous research suggests that salesforce training is positively associated with improved salesforce productivity (e.g., Farrell & Hakstian, 2001; Roberts, Lapidus, & Chonko, 1994; Roman, Ruiz, & Munuera, 2002). According to the social exchange theory, social attitudes and behaviors are the results of an exchange process between two parties that often go beyond economic exchange (Blau, 1983; Gouldner, 1960). The relationship between a firm's provision of ICT training to salesforce and the ICT-enabled performance (e.g., administrative and sales output) can be viewed as a product of social exchange. Because ICT training can favorably affect the salesperson's perceptions of organizational support (an employee's perception that the organization cares for his or her well-being and is supportive of his or her concerns [Eisenberger, Huntington, Hutchison, & Sowa, 1986]), salespeople who receive higher levels of training are more likely to reciprocate with favorable job-related performance and attitude toward their jobs. Thus, we posit a direct effect of ICT training on administrative performance, outcome performance, and job satisfaction.

H2a. Training relates positively to job satisfaction.

H2b. Training relates positively to administrative performance.

H2c. Training relates positively to outcome performance.

Social exchange theorists suggest that organizational support is a strong predictor of workplace outcomes including attachment and feelings of obligation to the organization, commitment, reduced absenteeism, organizational citizenship behavior, and job performance (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001; Eisenberger, Cummings, Armelo, & Lynch, 1997; Eisenberger, Fasolo, & Davis-LaMastro, 1990; Eisenberger et al., 1986; Lynch, Eisenberger, & Armeli, 1999; Riggle, Edmondson, & Hansen, 2009; Shore & Wayne, 1993). Organizational support theory, a social exchange theory, may be useful to understand the relationship between ICT support and salesforce behavior. This theory holds that employees increase their effort in carrying out organizational tasks to the degree that the organization is perceived to be willing and able to reciprocate with desirable socioemotional resources (Aselage & Eisenberger, 2003). Perception of organizational support influences job satisfaction in several ways including addressing socioemotional needs, increasing performance–reward expectancies, and signaling the availability of aid when needed (Rhoades & Eisenberger, 2002). Because organizational support reduces workplace tensions by satisfying the workforce's needs for emotional support (Rhoades & Eisenberger, 2002), organizational support theory suggests that managerial actions and attitudes concerning ICTs influence a salesperson's behavior. Salespeople who perceive a higher level of organizational ICT support tend to consider their job as more pleasant, to feel happier at work, and to be obligated to help the organization to meet its goals, and they may demonstrate a stronger commitment to use ICT tools for improved performance.

These, in turn, positively influence job performance and satisfaction (Rhoades & Eisenberger, 2002; Trauth & Cole, 1992). Thus, based on the above discussion, we predict that a firm's ICT support positively relates to salesperson administrative performance, outcome performance, and job satisfaction.

H3a. Support relates positively to job satisfaction.

H3b. Support relates positively to administrative performance.

H3c. Support relates positively to outcome performance.

3.2. *The relationship between job performance and job satisfaction*

The balance theory can be useful in providing theoretical support for the job performance–job satisfaction link. This theory holds that an individual is expected to form positive or negative feelings after obtaining and assessing his or her job performance (Locke, 1976). If her or his job performance is conceived to be positive or rewarding, job satisfaction is likely to emerge (Locke, 1970). Consistent with this theory, previous studies suggest a mild, positive relationship between job performance and job satisfaction (e.g., Bagozzi, 1980; Behrman & Perreault, 1984; Christen, Iyer, & Soberman, 2006). Therefore, we hypothesize the positive effects of a salesperson's administrative and outcome performance on job satisfaction. We predict that both administrative performance (e.g., planning, time management, and reporting) and outcome performance (e.g., help to increase market share) are key measures of sales success that ultimately improve salesforce job satisfaction.

H4a. Administrative performance relates positively to sales job satisfaction.

H4b. Outcome performance relates positively to job satisfaction.

3.3. *The moderating effect of salesperson technology orientation*

Organizational ICT capability (e.g., infrastructure, training, support) and provision of sales technology alone may not guarantee improved salesforce job performance and job satisfaction. Salesperson technology orientation (i.e., the predisposition to embrace sales technologies in their tasks) can play a key role in shaping relationships between ICT capabilities and salesforce job satisfaction. Devaraj and Kohli (2003) argue that the driver of the impact of information technology is not the investment in technology, but the actual application of technology. Sales literature shows that technology orientation has a strong effect on how effectively a salesperson uses information about customers and shapes sales performance (Hunter & Perreault, 2006; Sundaram et al., 2007). We, therefore, posit that salespeople with higher levels of technology orientation should be more willing and able to use new and sometimes sophisticated technologies to perform their jobs. Those lacking a high technological orientation may not be able to leverage the technologies for success. As a result, the salespeople who are technologically oriented may be able to perform some tasks more efficiently than those who have low levels of technology orientation. The greater feelings of efficacy resulting from enhanced performance should manifest themselves in higher job satisfaction. Therefore, we hypothesize the following:

H5a. Technology orientation moderates the relationship between infrastructure and job satisfaction in such a way that a firm's ICT infrastructure will be a significant positive predictor (not significant) of job satisfaction when salesperson technology orientation is high (low).

H5b. Technology orientation moderates the relationship between training and job satisfaction in such a way that a firm's ICT training will be a significant positive predictor (not significant) of job satisfaction when salesperson technology orientation is high (low).

H5c. Technology orientation moderates the relationship between support and job satisfaction in such a way that a firm's ICT support is a significant positive predictor (not significant) of job satisfaction when salesperson technology orientation is high (low).

4. Methodology

4.1. Sample and procedure

A global marketing research company located in a large city in India collected data for this study by surveying area pharmaceutical sales representatives. The Indian pharmaceutical industry is continuously growing and currently ranks third in terms of global volume of production. Among the reasons for choosing pharmaceutical sales reps are as follows: (1) a broad array of ICTs are available; (2) ICT infrastructure, training, and support vary across pharmaceutical companies; (3) pharmaceutical reps are prototypical professional salespeople; and (4) the use of technology is not completely within an employer's control (Speier & Venkatesh, 2002; Sundaram et al., 2007).

Using a list of pharmaceutical companies obtained from the Indian Drug Manufacturers' Association, 30 large- and medium-sized pharmaceutical firms' marketing executives were approached and asked for a company-wide list of field sales representatives. Fourteen of them obliged, and this resulted in a master list of 672 active sales representatives. Of this master list, 550 representatives who had a minimum of three years of experience were qualified to participate in the study. Experienced field investigators drawn from a pool of field research staff of the research firm administered the survey at multiple locations based in five major cities. Before the survey was administered, the questionnaire was pretested for readability, clarity, and sensibility by using a representative sample of 10 pharmaceutical sales representatives. Participants were informed that their participation was voluntary and were assured of confidentiality of all the information provided. The survey questionnaire was prepared, pretested, and administered in English. Before responding to the survey, the respondents were instructed to think about recent meetings with physicians and answer the questions based on that recollection. Any respondent not reporting personal contact with a physician within two months was excluded from analyses, resulting in 372 completed qualifying questionnaires. Of those, 14 cases were excluded because of incomplete responses, resulting in 358 useable responses. The result is a 67% response rate.

Table 2 displays a profile of the sample. The respondents' average experience in a pharmaceutical sales job was six years ($SD = 6.7$). The study sample consists of approximately 92% of men with a median reported age between 24 and 52 years. Most respondents represent foreign-owned (non-Indian) companies (66.4%). A majority of them represent prescription drugs (51.1%), with 11.2% representing over-the-counter drugs and 31.8% representing both. The physicians they call on include general practitioners (34.6%), specialists (42.2%), and

a mixture of both (15.4%). Specialists were composed of dentists, ophthalmologists, pediatricians, etc.

4.2. Measurement

Table 3 presents a summary of measurement items adapted from scales widely applied in previous studies. Job satisfaction was measured by the three-item scale of Cammann, Fichman, Jenkins, and Klesh (1983). Sample items include "All in all, I am satisfied with my job" and "In general, I don't like my job (reverse item)." A seven-point scale using a slightly modified version of the four-item scale of Sundaram et al. (2007) measured salesperson outcome performance. Respondents were directed to assess "to what extent has ICT affected the quality of your performance" (e.g., Behrman & Perreault, 1982; Hunter, 2004). Administrative performance was assessed with a three-item scale adapted from Sundaram et al. (2007) (see Behrman & Perreault, 1982; Hunter & Perreault, 2007). The measure assesses the quality of the salesperson's call planning, time management, and reporting to supervisors. To assess ICT infrastructure, we adapted four items from Chen and Tsou (2007). This measure emerges from the rich information system literature (Bharadwaj, 2000; Ross et al., 1996; Weill et al., 1996). Based on item reliability, modification indices, and tests of discriminant validity from confirmatory factor analysis (CFA), we deleted one item: "Our company has emphasized ICT staffing and training." One additional item, "Our company has embraced sophisticated communication applications," was added to reflect the nature of our study.

ICT training was measured with a three-item scale based on the work of Roberts et al. (1994) and Johlke (2008). The measure of Hunter and Perreault (2006) was adapted to assess ICT support. One reverse item, "I feel that I need more help with ICT than I get," with a large number of high modification indices and a poor factor loading was deleted. Salesperson technology orientation was measured by the scale of Hunter and Perreault (2006) which is composed of three items, including "I extensively use ICTs to perform my job" and "I try to link different ICTs so that they work together well."

5. Results

The hypothesized relationships were estimated using structural equation modeling with the use of maximum likelihood estimation. The assessment of the hypothesized model follows the two-stage analytic technique with a thorough assessment of the measurement theory via CFA preceding an assessment of the implied structural theory (see Hair, Back, Babin, Anderson, & Tatham, 2010). The CFA was used to assess construct validity and measurement theory quality (fit). Afterward, the structural relations among ICT factors, job performance, and job satisfaction were evaluated. In addition, we used a multigroup analysis in AMOS for testing the moderating effect of technology orientation.

5.1. Measurement model

A confirmatory factor analysis with six latent constructs and 20 items was performed to determine the model fitness. The goodness-of-fit indices for the measurement model are: $\chi^2_{(155)} = 260.197$, $p < .001$; goodness-of-fit index (GFI) = .93; root mean square error of approximation (RMSEA) = .044; and comparative fit index (CFI) = .98. All indices are in line with a reasonable fit for a model of this complexity and this sample size as indicated in Hair et al. (2010, p. 654). We, therefore, interpret the overall model fit as acceptable and turn toward other indicators of construct validity.

As shown in Table 3, all factor loadings are significant and higher than .5, which provides an initial support for convergent validity (Gerbing & Anderson, 1988). Average variance extracted (AVE) estimates for all hypothesized constructs are higher than .50, and construct reliabilities are higher than the recommended level of .70 (Hair et al., 2010). Thus, taking loadings, AVE, and construct reliabilities together,

Table 2
Sample characteristics.

Sample size	358 Pharmaceutical sales representatives
Average work experience	6 years
Gender	Male = 91.9% Female = 8.1%
Age	Median age = between 24 and 52 years
Company types	Foreign-owned company = 66.4% Domestically-owned company = 29.1%
Drug types	Prescription drugs = 51.1% Over-the-counter (OTC) = 11.2% Both = 31.8%
Physicians visited	General = 34.6% Specialist = 42.2% (dentist, ophthalmologist, pediatrician, gynecologist, cardiologist, neurologist) Both = 15.4%

Table 3

Measurement items, standardized CFA factor loadings, average variance extracted (AVE), and composite reliabilities.

Constructs and items	Factor loading	Composite reliability	AVE
<i>Job satisfaction</i>		0.85	0.65
All in all, I am satisfied with my job.	0.775		
In general, I like working at my company.	0.889		
In general, I don't like my job. (<i>r</i>)	0.747		
<i>Infrastructure</i>		0.89	0.67
Our company has allocated a generous budget for purchasing ICT hardware.	0.761		
Our company has allocated a generous budget for purchasing ICT software.	0.772		
Our company has embraced sophisticated Internet applications.	0.867		
Our company has embraced sophisticated communication applications.	0.859		
<i>Training</i>		0.78	0.55
I have received enough ICT training to do my job well.	0.640		
The ICT training that I have received is useful.	0.788		
The ICT training that I have received helped me to become more efficient and productive.	0.784		
<i>Support</i>		0.87	0.69
My company adequately equips me with ICT tools.	0.826		
My company has supplied all information and communication technologies that are needed to perform my job well.	0.843		
My company has adequately supported me on the use of ICT in my sales job.	0.821		
<i>Administrative performance</i>		0.88	0.71
ICT helped in managing my time.	0.857		
ICT improved my planning ability.	0.828		
ICT improved my reporting ability to my supervisor.	0.837		
<i>Outcome performance</i>		0.82	0.53
To what extent has ICT affected the quality of your performance with regard to:			
Contributing to company's emphasis on increasing market share.	0.751		
Help in identifying major accounts in the territory and promote sales to them.	0.682		
Assist in generating sales of company's new products.	0.711		
Help in meeting sales targets.	0.761		
<i>Technology orientation</i>		0.81	0.59
I extensively use ICTs to perform my job.	0.840		
I try to link different ICTs so that they work together well.	0.817		
Compared to others in salespeople, I am technology oriented.	0.626		

they provide initial support for the convergent validity of the measurement model. Since the AVE by each latent variable's measure was larger than the squared interconstruct correlation (see Table 4), discriminant validity is also demonstrated (Fornell & Larcker, 1981). The indicators have more in common with their respective constructs than they do with other constructs.

Since our independent and dependent variables come from the same data source, we acknowledged the possibility of common method bias (CMB). Therefore, we tested for the possibility of CMB using Harman's single-factor test on items included in our measurement model. The result of a principal component factor analysis revealed that the first factor explained only 29% of the variance, which shows that CMB does not appear to be a serious problem in the data (Podsakoff & Organ, 1986). In addition, a solution including a measurement factor does not significantly improve fit, providing further evidence of a lack of CMB (Hair et al., 2010).

5.2. Hypothesis testing

We next turn to the structural model. The fit indices for the hypothesized model are once again in line with the guidelines from Hair et al. (2010, p. 654) ($\chi^2_{(156)} = 263.4, p < .001$; GFI = .93; RMSEA = .044; CFI = .97). Given good fit, we turn toward the individual hypotheses.

Table 4

Interconstruct correlations and descriptive statistics.

	1	2	3	4	5	6
1. Infrastructure	1.00					
2. Training	0.79	1.00				
3. Support	0.73	0.74	1.00			
4. Outcome performance	0.52	0.58	0.58	1.00		
5. Administrative performance	0.47	0.71	0.73	0.51	1.00	
6. Job satisfaction	0.36	0.43	0.42	0.48	0.43	1.00
Mean	4.95	5.05	5.02	5.42	5.34	5.12
Standard deviation	1.28	1.31	1.30	0.91	1.28	1.18

Note: all correlations are significant at the .01 level.

5.2.1. Direct effects

Table 5 presents the results of hypothesis testing. Hypotheses 1a–1c predict that ICT infrastructure is positively related to job satisfaction, administrative performance, and outcome performance, respectively. Results do not support a direct effect of infrastructure on job satisfaction ($\beta = .067, t = .554, p > .05$) and outcome performance ($\beta = .088, t = .828, p > .05$). However, infrastructure significantly predicts administrative performance ($\beta = .363, t = 3.28, p < .01$). Hence, hypothesis 1b is supported, but hypotheses 1a and 1c are not. Hypotheses 2a–2c posit a positive impact of ICT training on job satisfaction, administrative performance, and outcome performance, respectively. Results do not support the hypothesized training–job satisfaction relationship ($\beta = .045, t = .159, p > .05$) and training–outcome performance ($\beta = .275, t = 1.12, p > .05$) relationships. However, as shown in Table 5, training significantly and positively relates to administrative performance ($\beta = .592, t = 2.32, p < .05$). Thus, these results indicate support for hypothesis 2b, but not for hypotheses 2a and 2c. Consistent with hypothesis 3b, ICT support positively enhances sales administrative performance ($\beta = .446, t = 2.13, p < .05$); however, it does not influence job satisfaction ($\beta = .009, t = .041, p > .05$) or outcome performance ($\beta = .252, t = 1.08, p > .05$). Thus, hypotheses 3a and 3c are not supported. As predicted by hypothesis 4a, administrative performance positively relates to salesperson job satisfaction ($\beta = .215, t = 2.01, p < .05$). Similarly, outcome performance positively impacts job satisfaction ($\beta = .387, t = 3.96, p < .001$), supporting hypothesis 4b.

5.2.2. Indirect effects

The previous section examined the direct effects of ICT on job performance and job satisfaction indicating that ICT factors are significant determinants of administrative performance and that, in turn, administrative performance relates positively to job satisfaction. To further test the significance of the indirect effects, we estimate the indirect effects of ICT factors on job satisfaction through administrative performance using the bootstrap estimation procedure in AMOS. Results reveal a positive and

Table 5
Structural parameter estimates.

			Estimate	S.E.	t-Value	p
Job satisfaction	←	Infrastructure	.067	.124	.554	.579
Administrative performance	←	Infrastructure	.363	.113	3.276	.001**
Outcome performance	←	Infrastructure	.088	.086	.828	.408
Job satisfaction	←	Training	.045	.319	.159	.873
Administrative performance	←	Training	.592	.320	2.316	.021*
Outcome performance	←	Training	.275	.245	1.121	.262
Job satisfaction	←	Support	.009	.198	.041	.967
Administrative performance	←	Support	.446	.209	2.130	.033*
Outcome performance	←	Support	.252	.166	1.083	.279
Job satisfaction	←	Administrative performance	.215	.097	2.014	.044*
Job satisfaction	←	Outcome performance	.387	.102	3.962	***

*** $p < .001$.

** $p < .01$.

* $p < .05$.

significant indirect effect of infrastructure on job satisfaction ($\beta = .356$, $p < .01$) through administrative performance. Similarly, the indirect effects of support on satisfaction ($\beta = .147$, $p < .05$) and training on satisfaction ($\beta = .210$, $p < .05$) via administrative performance are significant.

5.2.3. Moderating effects

Because the direct effects of ICT factors on job satisfaction are not significant, we were interested to gain further insights into whether a salesperson's technology orientation can moderate the relationships in the model. Before performing moderation analysis using the multigroup analysis in AMOS, we split the sample into high and low technology orientation groups by following the median split procedure. Afterward, we tested invariance between two groups by following conventional procedures (e.g., Hair et al., 2010). First, we compared a constrained model that imposes equality constraints on the parameters across groups with an unconstrained baseline model that allows these parameters to vary freely across groups. Second, a chi-square difference test for moderation examines the detriment in fit associated with the structural invariance constraint. Results show that the unconstrained and constrained models differ in fit ($\Delta\chi^2 = 37.947$, $df = 3$, $p < .05$), suggesting technology orientation as a moderator that alters the relationship between ICT factors and job satisfaction.

Table 6 presents a summary of the results of the individual variable moderation analysis. Significant chi-square differences exist for invariance constraints on the infrastructure \rightarrow job satisfaction ($\Delta\chi^2 = 4.84$, $df = 1$, $p < .05$) and support \rightarrow job satisfaction ($\Delta\chi^2 = 2.82$, $df = 1$, $p < .1$) coefficients. Thus, consistent with hypothesis 5a, we find a significant positive influence of infrastructure on job satisfaction in the high technology orientation group ($\beta = .798$, $p < .05$). However, for the low technology orientation group, infrastructure is not a significant predictor of job satisfaction ($\beta = .075$, $p > .05$). This suggests that the influence of ICT infrastructure on the salesforce's job satisfaction is significantly higher when their technology orientation is high than low. Similarly, as predicted in hypothesis 5c, ICT support is a stronger predictor of job satisfaction when technology orientation is high ($\beta = .508$, $p < .10$) than low ($\beta = .088$, $p > .05$). In other words, ICT support is more important for the salesforce with higher levels of

technology orientation. Contrary to the prediction (hypothesis 5b), technology orientation does not moderate the relationship between ICT training and job satisfaction. This means that the role of ICT training is not significantly different between the high ($\beta = .211$, $p > .05$) versus the low ($\beta = .042$, $p > .05$) technology orientation groups. Overall, the results support a moderating role of technology orientation on the relationship between ICT factors and job satisfaction.

6. Discussion and conclusion

While the existing research confirms various determinants of employee job satisfaction, our study specifically examines whether B2B salesforce perceptions of firm job characteristics/job enrichment efforts in regard to ICT infrastructure, training, and support influence salesforce job satisfaction. The study findings demonstrate that ICT has not only become an integral part of a B2B sales representative's routine, but it also enhances salesforce performance and job satisfaction. ICTs have positive indirect effects on the salesforce's job satisfaction through administrative performance. This means that ICT infrastructure, training, and support improve sales-related administrative tasks or the nonselling activities, which in turn influence a salesperson's job satisfaction. While companies continuously experience enormous challenges to effectively leverage sales technologies to increase revenue, sales managers are increasingly under pressure to justify the investments made in sales technologies (Petersen, 1997; Speier & Venkatesh, 2002; Thetgyi, 2000). The findings of this study help justify continuous investment in salesforce technology, training, and support. As new and sophisticated ICTs continue to emerge, B2B firms cannot afford to solely rely on traditional sales technologies (e.g., SFA and CRM). Rather, salespeople should be encouraged to adopt and use a rich variety of new and emerging ICTs, including social media, blogs, wireless and cellular networking, mobile applications, etc.

In light of the extensive use of ICTs in managing salesforce activities in B2B selling (e.g., pharmaceutical industry), the firm should recruit salespeople who have a positive mind-set and ability to learn about using ICT resources. Furthermore, training should address the inhibitions that already exist among sales representatives who do not score high on technological orientation. The efficient

Table 6
Summary of moderation analysis.

Hypothesized paths	Parameter estimates (t-Value)		Tests for invariance	
	Technology orientation		$\Delta\chi^2$ ($\Delta df = 1$)	Significance
Infrastructure \rightarrow job satisfaction	High	Low		
	.798 (2.34)**	.075 (.828)	4.84	**
Support \rightarrow job satisfaction	.508 (1.919)*	.088 (.514)	2.82	*
Training \rightarrow job satisfaction	.211 (.733)	.042 (.313)	0.83	n.s.

**Significant at 0.05 level, *at 0.10 level, n.s. = not significant.

use of help desks and around-the-clock assistance along with mentoring may be helpful in this regard.

The findings indicate that the salesforce's propensity and proficiency in the use of ICT tools favorably affect sales tasks and job satisfaction. Salespeople with higher levels of technology orientation show superior overall job satisfaction as ICT infrastructure and support levels increase. This means that besides equipping and providing continuous technical support to field salespeople, firms may want to enhance salesperson predisposition to adopt, use, and integrate ICT tools in their daily professional activities. Studies also show that salespeople, especially older salespeople, sometimes show technophobia and use only a fraction of the available technology tools (Donaldson & Wright, 2004; Greenberg, 2004; Parthasarathy & Sohi, 1997; Speier & Venkatesh, 2002). Salespeople have an additional reason to enhance their technology orientation as more of today's B2B buyers use online trading platforms and expect suppliers to be on the same page with the use of technology to maintain and build relationships between the two parties. An important managerial implication of this phenomenon would be to deliberately recruit technologically adept salespeople who have the propensity to learn, adopt, and use ICTs appropriate today and the ability to keep pace with technology throughout their sales career.

One original finding of the present study is the fact that the ICTs have a greater and more favorable effect on administrative performance than on outcome performance. This is consistent with the conventional wisdom that ICTs are used more for facilitating selling functions rather than directly generating sales volume. To improve outcome performance, special efforts should be directed at developing sales-oriented ICT infrastructure, training, and support that directly facilitate selling activities. Having said this, sales managers cannot undermine the role of administrative performance because sales-related administrative jobs not only are complementary to sales tasks but also serve as a critical resource to build customer relationships and generate sales.

Another interesting result of this study is the relationships between the dimensions of job performance and job satisfaction. Salesperson outcome performance has a greater positive effect on job satisfaction than administrative performance. This result provides an additional justification why firms need to improve their sales-generating ICTs. In addition, salesforce ICT training programs should equally emphasize outcome-oriented selling proficiencies as well as administrative skills.

By drawing on the social exchange theory, the job characteristics model, and the balance theory, our study contributes to the marketing literature by proposing and empirically testing the relationship between the sales ICT-related organizational capabilities and job enrichment efforts (i.e., infrastructure, training, and support) and job satisfaction. Contrary to some information system studies proposing a direct effect of information technology on job satisfaction (e.g., Carey, 1992; Counte, Kjerulff, Salloway, & Campbell, 1985; Henry & Stone, 1995), the results of this study suggest that sales technology does not directly influence job satisfaction unless the focus rests solely on those high in technology orientation. One explanation may be that the professional nature of pharmaceutical salespeople requires technology to be leveraged into performance. If not, satisfaction does not increase. Salesperson administrative performance facilitates the impact of ICT on job satisfaction. In addition, salesperson technology orientation moderates the impact of ICT infrastructure and support on job satisfaction. In line with Brady et al. (2008), we call for additional research in the area of ICT and its potential impact on marketing practice. The current study takes a holistic approach and relies on ICT as a broader and a more comprehensive term than SFA, CRM, or ST and enriches the sales technology literature by establishing its role on B2B salesforce's job satisfaction.

7. Limitations and future research

The study design presents some limitations. The data collection took place in India at one specific point in time using only pharmaceutical sales representatives. Although several emerging markets like India

have limitations of broadband technology, the penetration of wireless communication and handheld information technology tools could make up for the deficiencies of technology infrastructure. However, future studies can use a longitudinal and cross-cultural research approach in collecting data from a more diverse range of salespeople across different cultural and geographic markets. Many other variables may play a role. An interesting avenue for future research would be to explore how a salesperson's individual characteristics such as the need for information technology usage (i.e., individual's motivation to use information technology), perceived innovativeness, and self-efficacy may play a role in the relationship between ICT and job satisfaction. Clearly, additional research is needed to determine whether demographic variables (i.e., age and gender) and education influence ICTs' effects on job satisfaction.

Herzberg, Mausner, and Snyderman (1959) suggest that certain motivational factors in the workplace cause job satisfaction, while deficiencies in hygiene factors cause dissatisfaction. As evidenced by the findings of our study, the ICT does not directly cause job satisfaction when the sales person's technology orientation is low, and hence, one may argue that, in fact, as a hygiene factor, ICT training may not contribute to satisfaction. Thus, as noted by one of the reviewers of this paper, another interesting direction for future research would be to empirically examine the two-dimensional paradigm of the motivation–hygiene theory.

References

- Ahearne, M., Hughes, D. E., & Schillewaert, N. (2007). Why sales reps should welcome information technology: Measuring the impact of CRM-based IT on sales effectiveness. *International Journal of Research in Marketing*, 24(4), 336–349.
- Ahearne, M., Jelinek, R., & Rapp, A. (2005). Moving beyond the direct effect of SFA adoption on salesperson performance: Training and support as key moderating factors. *Industrial Marketing Management*, 34, 379–388.
- Ahearne, M., Jones, E., Rapp, A., & Mathieu, J. (2008). High touch through high tech: The impact of salesperson technology usage on sales performance via mediating mechanisms. *Management Science*, 54(4), 671–685.
- Ahearne, M., Srinivasan, N., & Weinstein, L. (2004). Effects of technology on sales performance: Progressing from technology acceptance to technology usage and consequences. *Journal Personal Selling Sales Management*, 24(4), 297–310.
- Alkhatib, F. M., & Doucette, W. R. (2008). Electronic detailing (e-detailing) of pharmaceuticals to physicians: A review. *International Journal of Pharmaceutical and Healthcare Marketing*, 2(3), 235–245.
- Aselage, J., & Eisenberger, R. (2003). Perceived organizational support and psychological contracts: A theoretical integration. *Journal of Organizational Behavior*, 24(5), 491–509.
- Bagozzi, R. P. (1980). Performance and satisfaction in the industrial salesforce: An examination of their antecedents and simultaneity. *Journal of Marketing*, 44(2), 65–77.
- Baldauf, A., Cravens, D. W., & Piercy, N. F. (2005). Sales management control research – Synthesis and an agenda for future research. *Journal of Personal Selling & Sales Management*, 25(1), 7–26.
- Behrman, D. N., & Perreault, W. D., Jr. (1982). Measuring the performance of industrial salespersons. *Journal of Business Research*, 10(3), 355–370.
- Behrman, D. N., & Perreault, W. D., Jr. (1984). A role stress model of the performance and satisfaction of industrial salespersons. *Journal of Marketing*, 48(4), 9–21.
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 24(1), 169–196.
- Bhattacharjee, A., & Hikmet, N. (2008). Reconceptualizing organizational support and its effect on information technology usage: Evidence from the health care sector. *Journal of Computer Information Systems*, 48(4), 69–76.
- Blau, P.M. (1983). *Exchange and power in social life*. New York: John Wiley.
- Brady, M., Fellenz, M. R., & Brookes, R. (2008). Researching the role of information and communications technology (ICT) in contemporary marketing practices. *Journal of Business & Industrial Marketing*, 23(2), 108–114.
- Brown, S. P., & Peterson, R. A. (1993). Antecedents and consequences of salesperson job satisfaction: Meta-analysis and assessment of causal effects. *Journal of Marketing Research*, 30(1), 63–77.
- Brown, S. P., & Peterson, R. A. (1994). The effect of effort on sales performance and job satisfaction. *Journal of Marketing*, 58(2), 70–80.
- Cammann, C., Fichman, M., Jenkins, G. D., & Klesh, J. R. (1983). Assessing the attitudes and perceptions of organizational members. In S. E. Seashore, E. E. Lawler III, P. H. Mirvis, & C. Cammann (Eds.), *Assessing organizational change: A guide to methods, measures, and practices* (pp. 71–138). New York, NY: Wiley.
- Carey, J. M. (1992). Job satisfaction and visual display unit (VDU) usage: An explanatory model. *Behaviour & Information Technology*, 11(6), 338–344.
- Chen, J., & Tsou, H. (2007). Information technology adoption for service innovation practices and competitive advantage: The case of financial firms. *Information Research: An International Electronic Journal*, 12(3), 314.

- Christen, M., Iyer, G., & Soberman, D. A. (2006). Job satisfaction, job performance, and effort: A reexamination using agency theory. *Journal of Marketing*, 70(1), 137–150.
- Chung, K. S. K., & Hossain, L. (2010). Towards a social network model for understanding information and communication technology use for general practitioners in rural Australia. *Computers in Human Behavior*, 26(4), 562–571.
- Counte, M.A., Kjerulf, K. H., Salloway, J. C., & Campbell, B. (1985). Implementing computerization in hospitals: A case study of the behavioral and attitudinal impacts of a medical information system. *Journal of Organizational Behavior Management*, 6(3/4), 109–122.
- Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6), 874–902.
- Davenport, T. H., Hammer, M., & Metsisto, T. J. (1989). How executives can shape their companies' information systems. *Harvard Business Review*, 67(5), 130–134.
- Devaraj, S., & Kohli, R. (2003). Performance impacts of information technology: Is actual usage the missing link? *Management Science*, 49(3), 273–289.
- Donaldson, B., & Wright, G. (2004). Salesforce automation in the UK pharmaceutical industry: Why is the strategic potential of these systems not being realised in practice? *Journal of Medical Marketing*, 4(3), 251–263.
- Eggert, A., & Serdaroglu, M. (2011). Exploring the impact of sales technology on salesperson performance: A task-based approach. *The Journal of Marketing Theory and Practice*, 19(2), 169–185.
- Eisenberger, R., Armeli, S., Rexwinkel, B., Lynch, P. D., & Rhoades, L. (2001). Reciprocation of perceived organizational support. *Journal of Applied Psychology*, 86(1), 42–51.
- Eisenberger, R., Cummings, J., Armeli, S., & Lynch, P. (1997). Perceived organizational support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology*, 82(5), 812–820.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75(1), 51–59.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507.
- Erfmeyer, R. C., & Johnson, D. A. (2001). An exploratory study of sales force automation practices: Expectations and realities. *Journal of Personal Selling & Sales Management*, 21(2), 167–175.
- Farrell, S., & Hakstian, A.R. (2001). Improving sales force performance: A meta-analytic investigation of the effectiveness and utility of personnel selection procedures and training interventions. *Psychology & Marketing*, 18(3), 281–316.
- Fornell, C., & Larcker, D. (1981). Evaluating structural equations models with unobserved variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Gerbing, D. W., & Anderson, J. C. (1988). An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, 25(2), 186–192.
- Gerhart, B. (1987). How important are dispositional factors as determinants of job satisfaction? Implications for job design and other personnel programs. *Journal of Applied Psychology*, 72(3), 366–373.
- Glisson, C., & Durick, M. (1988). Predictors of job satisfaction and organizational commitment in human service organizations. *Administrative Science Quarterly*, 33(1), 61–81.
- Gohmann, S. F., Guan, J., Barker, R. M., & Faulds, D. J. (2005). Perceptions of sales force automation: Differences between sales force and management. *Industrial Marketing Management*, 34(4), 337–343.
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25(2), 161–178.
- Greenberg, P. (2004). *CRM at the speed of light* Essential customer strategies for the 21st century (Third Edition). McGraw-Hill Osborne Media.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16(2), 250–279.
- Hair, J. F., Back, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). *Multivariate data analysis*. New Jersey: Prentice Hall.
- Henry, J., & Stone, R. (1995). Computer self-efficacy and outcome expectancy: The effect on the end-user's job satisfaction. *Computer Personnel*, 16(4), 15–34.
- Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work* (2nd ed.). New York: John Wiley & Sons.
- Honeycutt, E. D. (2005). Technology improves sales performance—doesn't it?: An introduction to the special issue on selling and sales technology. *Industrial Marketing Management*, 34(4), 301–304.
- Hormans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597–606.
- Hunter, G. L. (2004). Information overload: Guidance for identifying when information becomes detrimental to sales force performance. *Journal of Personal Selling & Sales Management*, 24(2), 91–100.
- Hunter, G. K., & Perreault, W. D., Jr. (2006). Sales technology orientation, information effectiveness, and sales performance. *Journal of Personal Selling & Sales Management*, 26(2), 95–113.
- Hunter, G. K., & Perreault, W. D., Jr. (2007). Making sales technology effective. *Journal of Marketing*, 71(1), 16–34.
- Jelinek, R., Ahearne, M., Mathieu, J., & Schillewaert, N. (2006). A longitudinal examination of individual, organizational, and contextual factors on sales technology adoption and job performance. *The Journal of Marketing Theory and Practice*, 14(1), 7–23.
- Johlke, M. C. (2008). Sales presentation skills and salesperson job performance. *Journal of Business & Industrial Marketing*, 21(5), 311–319.
- Jones, E., Sundaram, S., & Chin, W. (2002). Factors leading to sales force automation use: A longitudinal analysis. *Journal of Personal Selling & Sales Management*, 22(3), 145–156.
- Keen, P. G. W. (1991). *Shaping the future: business design through information technology*. Cambridge, MA: Harvard Business Press.
- Ko, D.-G., & Dennis, A.R. (2004). Sales force automation and sales performance: Do experience and expertise matter? *Journal Personal Selling & Sales Management*, 24(4), 311–322.
- Lapierre, J., & Denier, A. (2005). ICT adoption and moderating effects of institutional factors on salesperson's communication effectiveness: A contingency study in high-tech industries. *Technovation*, 25(8), 909–927.
- Locke, E. A. (1970). Job satisfaction and job performance: A theoretical analysis. *Organizational Behavior & Human Performance*, 5(5), 484–500.
- Locke, E. A. (1976). *The nature and causes of job satisfaction* in handbook of industrial and organizational psychology. In M.D. Dunnette (Ed.), Chicago: Rand McNally.
- Loher, B. T., Noe, R. A., Moeller, N. L., & Fitzgerald, M. P. (1985). A meta-analysis of the relation of job characteristics to job satisfaction. *Journal of Applied Psychology*, 70(2), 280–289.
- Lynch, P. D., Eisenberger, R., & Armeli, S. (1999). Perceived organizational support: Inferior versus superior performance by wary employees. *Journal of Applied Psychology*, 84(4), 467–483.
- Marshall, G. W., Moncrief, W. C., Rudd, J. M., & Lee, N. (2012). Revolution in sales: The impact of social media and related technology on the selling environment. *Journal of Personal Selling & Sales Management*, 32(3), 349–363.
- Mathieu, J., Ahearne, M., & Taylor, S. R. (2007). A longitudinal cross-level model of leader and salesperson influences on sales force technology use and performance. *Journal of Applied Psychology*, 92(2), 528–537.
- McKenney, J. L. (1995). *Waves of change: Business evolution through information technology*. Cambridge, MA: Harvard Business School Press.
- Morris, M. H., Davis, D. L., Allen, J. W., Avila, R. A., & Chapman, J. (1991). Assessing the relationship among performance measures, managerial practices, and satisfaction when evaluating the sales force: A replication and extension. *Journal of Personal Selling & Sales Management*, 11(3), 25–35.
- Neuman, G. A., Edwards, J. E., & Raju, N. S. (1989). Organizational development interventions: A meta-analysis of their effects on satisfaction and other attitudes. *Personnel Psychology*, 42(3), 461–489.
- Onyemah, V., Swain, S. D., & Hanna, R. (2010). A social learning perspective on sales technology usage: Preliminary evidence from an emerging economy. *Journal of Personal Selling & Sales Management*, 30(2), 131–142.
- Park, J. E., Kim, J., Dubinsky, A. J., & Lee, H. (2010). How does sales force automation influence relationship quality and performance? The mediating roles of learning and selling behaviors. *Industrial Marketing Management*, 39(7), 1128–1138.
- Parthasarathy, M., & Sohi, R. S. (1997). Sales force automation and the adoption of technological innovations by salespeople: Theory and implications. *Journal of Business and Industrial Marketing*, 12(3), 196–201.
- Petersen, G. S. (1997). *High impact sales force automation*. Boca Raton, FL: St: Lucie Press.
- Podsakoff, P.M., & Organ, D. W. (1986). Self-reports in organization research: Problems and prospects. *Journal of Management*, 12(4), 531–544.
- Pullig, C., Maxham, J. G., & Hair, J. F. (2002). Salesforce automation systems: An exploratory examination of organizational factors associated with effective implementation and sales force productivity. *Journal of Business Research*, 55, 401–415.
- Rangarajan, D., Jones, E., & Chin, W. (2005). Impact of sales force automation on technology-related stress, effort, and technology usage among salespeople. *Industrial Marketing Management*, 34(4), 345–354.
- Rapp, A., Agnihotri, R., & Forbes, L. P. (2008). The sales force technology-performance chain: The role of adaptive selling and effort. *Journal of Personal Selling & Sales Management*, 28(4), 335–350.
- Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: A review of the literature. *Journal of Applied Psychology*, 87(4), 698–714.
- Riggie, R. J., Edmondson, D. R., & Hansen, J.D. (2009). A meta-analysis of the relationship between perceived organizational support and job outcomes: 20 years of research. *Journal of Business Research*, 62(10), 1027–1230.
- Rivers, L. M., & Dart, J. (1999). The acquisition and use of sales force automation by mid-sized manufacturers. *Journal of Personal Selling & Sales Management*, 29(2), 59–73.
- Roberts, J., Lapidus, R. S., & Chonko, L. B. (1994). An exploratory examination of situational variables, effort, and salesperson performance. *Journal of Marketing Theory and Practice*, 2(3), 70–93.
- Robinson, L., Marshall, G. W., & Stamps, M. B. (2005a). Sales force use of technology: Antecedents to technology acceptance. *Journal of Business Research*, 58(12), 1623–1631.
- Robinson, L., Marshall, G. W., & Stamps, M. B. (2005b). An empirical investigation of technology acceptance in a field sales force setting. *Industrial Marketing Management*, 34(4), 407–415.
- Roman, S., Ruiz, S., & Munuera, J. L. (2002). The effects of sales training on sales force activity. *European Journal of Marketing*, 36(11/12), 1344–1366.
- Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Develop long-term competitiveness through IT assets. *Sloan Management Review*, 38(1), 31–45.
- Schaper, L. K., & Pervan, G. P. (2007). ICTs & OTs: A model of information and communications technology acceptance and utilisation by occupational therapists. *International Journal of Medical Informatics*, 76(1), S212–S221.
- Schillewaert, N., Ahearne, M. J., Frambach, R. T., & Moenaer, R. K. (2005). The adoption of information technology in the sales force. *Industrial Marketing Management*, 34(4), 323–336.
- Shim, S. J., & Viswanathan, V. (2007). User assessment of personal digital assistants used in pharmaceutical detailing: System features, usefulness and ease of use. *The Journal of Computer Information Systems*, 48(1), 14–21.
- Shore, L. M., & Wayne, S. J. (1993). Commitment and employee behavior: Comparison of affective commitment and continuance commitment with perceived organizational support. *Journal of Applied Psychology*, 78(5), 774–780.
- Singh, J., Goolsby, J. R., & Rhoads, G. K. (1994). Behavioral and psychological consequences of boundary spanning burnout for customer service representatives. *Journal of Marketing Research*, 31(4), 558–569.

- Speier, C., & Venkatesh, V. (2002). The hidden minefields in the adoption of sales force automation technologies. *Journal of Marketing*, 66(3), 98–111.
- Sundaram, S., Schwarz, A., Jones, E., & Chin, W. W. (2007). Technology use on the front line: How information technology enhances individual performance. *Journal of the Academy of Marketing Science*, 35(1), 101–112.
- Thatcher, J. B., Stepina, L., & Boyle, R. (2002). Turnover of information technology workers: Examining empirically the influence of attitudes, job characteristics, and external markets. *Journal of Management Information Systems*, 19(3), 231–261.
- Thetgyi, O. (2000). Radical makeovers. *Sales and Marketing Management*, 152(4), 78–85.
- Ting, Y. (1997). Determinants of job satisfaction of federal government employees. *Public Personnel Management*, 26(3), 313–334.
- Trauth, E. M., & Cole, E. (1992). The organizational interface: A method for supporting end users of packaged software. *MIS Quarterly*, 16(1), 35–53.
- Umstot, D.D., Bell, C. H., & Mitchell, T. R. (1976). Effects of job enrichment and task goals on satisfaction and productivity: Implications for job design. *Journal of Applied Psychology*, 61(4), 379–394.
- Weill, P., Broadbent, M., & Butler, C. (1996). *Exploring how firms view IT infrastructure*. Working paper. The University of Melbourne.
- Zoltners, A. A., Sinha, P., & Zoltners, G. A. (2001). *The complete guide to accelerating sales force performance*. New York: AMACOM.
- Yam B. Limbu** is an Assistant Professor of Marketing at Montclair State University. His research interests include consumer behavior, Internet marketing, pharmaceutical and healthcare marketing, communication strategies, and sales management. His publications have appeared in the *Journal of Business-to-Business Marketing*, *Marketing Education Review*, *Journal of Research in Interactive Marketing*, *Journal of Current Issues and Research in Advertising*, and *Journal of Promotion Management*.
- C. Jayachandran** is a Professor of Marketing and International Business. His research interests include entry modes into emerging markets, innovation, healthcare, and services marketing. His recent publications appeared in the *International Journal of Innovation and Research*, *Asian Case Research Journal*, *Journal of Consumer Marketing*, and *International Journal of Information Systems and Social Change*.
- Barry J. Babin** is the Max P. Watson, Jr. Endowed Professor and Chair of the Department of Marketing and Analytics at Louisiana Tech University. His research appears in many prestigious journals including *The Journal of the Academy of Marketing Science*, *The Journal of Marketing*, *The Journal of Retailing*, *The Journal of Consumer Research*, *The International Journal of Wine Business Research*, and *The Journal of Business Research*. He is coauthor of several books including *CB: A Value Based Approach*, *Business Research Methods*, *Sales Management: Building Customer Relationships and Partnerships*, *Multivariate Data Analysis*, and *Exploring Marketing Research*.