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# ICT adoption and moderating effects of institutional factors on salesperson's communication effectiveness: a contingency study in high-tech industries

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## Abstract

Although many studies have suggested that the adoption of information and communication technologies (ICT) has a positive impact on global sales force performance, few have focused on more specific benefits, particularly as regards facilitating factors. This article uses an organizational approach to present empirical evidence regarding whether and how ICT adoption influences an individual salesperson's communication effectiveness. The authors define a set of institutional antecedents and moderators to empirically test a contingency model for four technologies, using data collected from salespeople in three high-tech industries. The results confirm the crucial role of institutional factors both in the initiation of individual ICT adoption and in subsequent communication effectiveness. However, most differences between the three samples are explained by the institutional factors as predictors of ICT adoption rather than as moderators of the relationship between ICT adoption and communication effectiveness. Another key finding of our study is the positive correlation between sales force IT adoption and communication effectiveness. This suggests that salespeople who use ICT tools and have a positive attitude toward those tools will achieve higher levels of communication effectiveness. In conclusion, we present the implications of our study for research and managerial practices.

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*Keywords:* Sales force; Information and communication technologies; Contingency; Organization

## 1. Introduction

Given a highly competitive environment, many businesses have sought to use information and communication technologies (ICT) to sustain their competitive advantage (Sohal et al., 2001). As a result, ICT have significantly influenced personal selling (Anderson, 1996; Keillor et al., 1997; Leigh and Marshall, 2001). Historically, the first ICT revolution occurred in the early 1980s with the appearance of the PC. Laptop computers followed, offering the sales force new possibilities and dreams (Engle and Barnes, 2000). ICT currently encompass a vast spectrum of hardware, telecommunication software and office equipment that convert raw data to useful information, adding value especially to the sales process (Sohal et al., 2001). ICT adoption for sales purposes is sometimes called sales force automation (SFA), which involves converting

manual sales activities to electronic processes through various combinations of hardware and software applications (Morgan and Inks, 2001; Rivers and Dart, 1999). Until now, however, there has been no evidence that more complex ICT are more appropriate. Similarly, there is no evidence that more simplistic ICT offer salespeople insufficient value (Speier and Venkatesh, 2002).

To date, moreover, there have been few studies on sales force adoption of new technologies, particularly as regards selling performance (Engle and Barnes, 2000). This is a critical gap when compared with the profusion of managerial literature describing ICT impacts on organizational performance, i.e. global performance as opposed to tightly focused marketing and sales performance (Dewett and Jones, 2001). Following a recent article by Pullig et al. (2002), we seek to fill this research gap by placing stronger focus on the individuals within an organization.

In the last decade, some authors have reported their thinking and findings on sales process automation, thus contributing new research directions to the discussion. Parthasarathy and Sohi (1997) discuss corporate adoption of ICT tools—primarily laptop computers—for sales

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personnel. Describing the organizational and individual factors that could affect ICT adoption success, they conclude by urging further study to determine whether and how salesperson productivity is enhanced. They also emphasize the need to identify the circumstances in which ICT adoption is most beneficial. Keillor et al. (1997) discuss the role of technology in enhancing the effectiveness and efficiency of salespeople navigating through the sales process. In addition, they empirically examine salespersons' attitudes towards technology and how those attitudes may affect sales productivity (annual sales). Their work encourages focus on the effects of individual factors, such as experience. In an empirical study investigating the pharmaceutical sales force in three different countries, Engle and Barnes (2000) empirically examine effectiveness gains (percentage growth) allowed by the laptop. Marshall et al. (1999) discuss how the adoption of a set of ICT tools affect sales force activities. Their conclusion, too, deplors the insufficient body of study on how technology and organizational change affect individual salesperson effectiveness. More recently, Good and Stone (2000) empirically explore the impact of computerization on individual marketer performance, including technical and managerial influences in their performance chain model derived from Delone and McLean (1992). Their findings show significant improvement of individual performance. Erffmeyer and Johnson (2001) highlight one final gap in the literature: very few articles examine the impact of implementing a set of different technologies, focusing instead on one technology at a time. This literature review undoubtedly points up the need for further research, for it indicates that the adoption–performance relationship is not likely to be a simple one of stimulus–response.

The recommendations of these authors provide vital insights for our research. Indeed, they implicitly encourage us to extend the studies of Pullig et al. (2002) into a contingency approach never empirically contemplated in this connection, although strongly recommended by Delone and McLean (1992). This article expands on the work of those authors by presenting empirical evidence of the conditions under which sales force adoption of a new technology occurs and is more or less effective in engendering communication effectiveness. Our objective is to fill this gap by conducting a contingency study and validating these issues in three industries having different levels of innovativeness in a high-tech context. Given the proliferation of technologies, the 'contradictory' findings of various studies and the unique context of different industrial sectors, an investigation of four specific technologies expected to improve communication effectiveness in three different high-tech industries will contribute to both marketing and ICT theory and practice.

To summarize, our study examines the institutional conditions under which ICT adoption by salespeople occurs and best leads to communication effectiveness. Using field data, we explore the degree to which this relationship is

enabled and modified by selected supervisory context variables: sales control, organizational culture, managerial style and organizational change processes. This article has four sections. In the first section, we review the literature pertaining to ICT in the sales process, then present a conceptual framework and the associated hypotheses. In the second, we describe our methodology. In the third, we discuss the key findings. To conclude, we present the implications of this research and directions for further research.

## 2. Theoretical background and model

### 2.1. Sales force adoption of information and communication technologies

*Defining ICT adoption.* In the literature on innovation diffusion, authors have noted how critically important innovation is for organizations (Rogers, 1995). Much of this literature focuses on innovativeness as a dependent variable. Furthermore, ICT usage is a necessary condition for ensuring productivity payoffs from ICT investments (Taylor and Todd, 1995). The degree of system usage is a frequently employed measure of ICT adoption success (Delone and McLean, 1992). However, if system usage is mandatory, it may not be an appropriate indicator (Kim and Lee, 1986; Taylor and Todd, 1995). Pullig et al. (2002) define effective ICT implementation occurring when the firm has gained appropriate, committed use of the tools by targeted employees. However, people are sometimes unwilling to use ICT systems, even if their job effectiveness would thereby be enhanced (Mathieson, 1991). Actually, technology usage and attitude toward technology are reciprocally linked. The extent of usage can affect the strength of positive or negative user attitudes toward ICT, and vice-versa. Furthermore, usage and user attitude are both direct antecedents of individual benefits (Delone and McLean, 1992). This relationship is consistent with recent marketing literature, which combines measures of attitude and behavior and thus provides a better adoption measure (Hultink and Atuahene-Gima, 2000). From this perspective, ICT adoption was measured in terms of both voluntariness of user participation (positive feeling or attitude) and frequency of use (behavior) (Kim and Lee, 1986). Positive assessment of an ICT may be a prerequisite, but is not always sufficient for successful adoption.

Although the two dimensions of the adoption construct could have independent effects on salesperson job performance (Delone and McLean, 1992), we emphasize their interaction because a positive feeling about ICT adoption without actual usage does not constitute adoption. This argues in favor of using a combination of attitude and behavior measures to determine whether salespeople who use ICT tools and have a positive feeling (attitude)

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