

CUSTOMER RELATIONSHIP MANAGEMENT IMPLEMENTATION GAPS

Alex R. Zablah, Danny N. Bellenger, and Wesley J. Johnston

Customer relationship management (CRM) implementation initiatives have been marred by failure, which many in the popular and academic literature attribute to limited technology acceptance among end users. This paper presents a conceptual model that depicts how the extent of alignment between the three constituent elements of a firm's CRM program (employees, processes, and technology) influences end user acceptance of CRM technology. In particular, the model proposes that perceived process–technology, technology–employee, and employee–process gaps within CRM programs generate cognitive dissonance among end users, and that the level of dissonance generated ultimately determines whether individuals will adopt or resist the new technology. Research and managerial implications stemming from the literature are provided.

One of the biggest customer relationship management hurdles that companies face is driving successful adoption among users. Users' private reasons for rejecting a new technology can play as significant a role in the success of an implementation as an organization's overall CRM [customer relationship management] strategy. (Klau 2003)

Over the past few years, the emergence of CRM technologies has promised to substantially enhance firms' ability to productively manage a heterogeneous customer portfolio. CRM tools—which vary widely in form and function—collectively work to enhance the relationship development process by enabling the coordination of sales, service, and marketing tasks within an organization. Global expenditure projections on CRM technology provide testament to its growing popularity among practitioners: it is estimated that, within the next three to four years, annual sales of CRM technology will exceed \$17 billion (Aberdeen Group 2003), and that estimate surpasses \$100 billion if the market is broadened to include CRM-related services (e.g., implementation-related consulting, customer care outsourcing, and change management) (Schneider 2003). However, as is illustrated in Table 1, estimates generated by private research firms suggest that a significant proportion (between 35 percent and 75 percent) of CRM implementation initiatives end in failure. Considering

that, on average, the implementation of a CRM solution lasts 24 months, costs from \$60 to \$130 million, and has the potential to damage existing relationships (Rigby, Reichheld, and Scheffer 2002), the organizational implications of such widespread failure are enormous.

The extant literature suggests that the relative success of CRM initiatives is heavily influenced by the interplay between three key organizational elements: people, processes, and technology (e.g., Bose 2002; Campbell 2003; Chen and Popovich 2003; Plakoyiannaki and Tzokas 2002; Sawhney and Zabin 2002). People are those responsible (i.e., employees) for executing firms' day-to-day CRM tasks, processes specify how CRM tasks will work together to help create value for the firm and its customers, and technology serves to either help employees execute CRM tasks or automate the tasks altogether. Thus, in order to successfully implement a CRM program, firms are faced with the challenge of (1) reengineering organizational work processes in order to ensure that they help foster mutually beneficial customer–provider relationships, (2) deploying CRM technologies that support these new processes, and (3) achieving user buy-in to both the newly deployed CRM technology and the redefined business processes (e.g., Fahey et al. 2001; Hansotia 2002; Rigby, Reichheld, and Scheffer 2002).

Although the literature recognizes that the reengineering of business processes is critical to achieving the cross-functional coordination that is the hallmark of successful CRM programs (e.g., Massey, Montoya-Weiss, and Holcom 2001; Ryals and Knox 2001), no attempt has been made to assess whether the business process innovations that accompany (or should accompany) the implementation of CRM technology influence an individual employee's (i.e., end user's) decision to adopt or reject CRM technology. That is, *extant technology acceptance explanations do not fully consider whether, how, or to what extent concurrent innovation efforts (e.g., redefinition of business processes) affect the likelihood that employees will assimilate newly*

Alex R. Zablah (MBA, Louisiana State University), Ph.D. Candidate in Marketing, J. Mack Robinson College of Business, Georgia State University, mktarzx@langate.gsu.edu.

Danny N. Bellenger (Ph.D., University of Alabama), Professor and Research Fellow of Marketing, J. Mack Robinson College of Business, Georgia State University, mktddb@langate.gsu.edu.

Wesley J. Johnston (Ph.D., University of Pittsburgh), CBIM Roundtable Professor of Marketing and a Director of the Center for Business and Industrial Marketing, J. Mack Robinson College of Business, Georgia State University, mktwj@langate.gsu.edu.

Table I
Divergent Measures of CRM Implementation Failure

Failure Rate (percent)	Measure	Comments	Source	Cited In
75	Implementation objectives being achieved.	Most failures found to occur in the SFA subcomponent of CRM.	Meta Group	"Short Takes: Does CRM Pay?" (2001); Krol (2002)
55	Intended benefits being realized.	Most widely cited CRM failure statistic.	Gartner Group	Caulfield (2001); Day (2002); Hellweg (2002); Rigby, Reichheld, and Scheffer (2002); Starkey and Woodcock (2002)
45	Level of satisfaction with the CRM installation.	Focuses on the perceptions of the chief information officer.	Merrill Lynch	Dignan (2002)
41	Degree to which the implementation is meeting expectations.	Survey of 1,670 IT professionals; only 29 percent had deployed CRM solutions when surveyed.	Data Warehousing Institute	Yu (2001)
35	Likelihood companies will show a measurable return on investment (ROI) within two years, based on measures of customer satisfaction, churn rate, share of wallet, and so on.	Thirty-five percent of companies are clearly failing, and the remaining 20 percent may see ROI in future periods; failure rates could reach 55 percent.	"Blueprint for CRM Success," sponsored by Caribou Lake Customer-I and CRMGuru.com	Krol (2002); Lee (2003); Zimmermann (2003)

deployed technological tools. Yet, given the apparent importance of business process innovation to the success of CRM initiatives, it seems critical to consider whether firms' ability or inability to align business processes with the new technological tools has an effect on user acceptance of the deployed technology. Therefore, in order to begin to address this important knowledge gap, the objectives of this effort are to develop and propose a conceptual model that purports to explain why there is variability in end user acceptance of CRM technology by explicitly considering the interplay between people, processes, and technology within the context of CRM initiatives. The proposed model is grounded in cognitive dissonance theory, and draws from the information technology (IT) and change management literature in order to identify the factors that affect end users' perceptions of the level of alignment that exists between the three key elements (i.e., people, processes, and technology) of CRM programs.

OVERVIEW AND BACKGROUND

CRM Defined

Given that numerous perspectives on CRM have been advanced in the popular and academic literature, it seems prudent to offer a formal definition of CRM before proceeding any further. Previous conceptualizations have defined CRM as a process (Day and Van den Bulte 2002; Srivastava, Shervani, and Fahey 1999), strategy (Davids 1999; Verhoef and Donkers 2001), philosophy (Hasan 2003), capability (Peppers, Rogers, and Dorf 1999), or as a technological tool (Shoemaker 2001). Whereas an evaluation of the different perspectives on CRM is beyond the scope of this effort, it is worth highlighting that each contributes in unique ways to the understanding of this phenomenon. However, for the purposes of this paper, and in line with the dominant perspective advocated in the academic literature (cf. Reinartz, Krafft, and Hoyer 2004), CRM is defined here as "an ongoing process that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit-maximizing portfolio of customer relationships" (Zablah, Bellenger, and Johnston 2004, p. 480).

CRM Technology

CRM technology represents one of the organizational resources that serves as an input into the CRM process and is intended to enhance firms' ability to productively build and maintain a profit-maximizing portfolio of customer relationships (cf. Fahey et al. 2001; Zablah, Bellenger, and Johnston 2004). Although the specific CRM tools individual firms choose to deploy are likely to vary significantly, CRM technology can be categorized according to the organizational

function it is intended to support and by its functionality. More specifically, CRM tools are designed to support sales (e.g., opportunity management), marketing (e.g., campaign management), and service and support tasks (e.g., case management), and serve to either (1) enable the coordination of tasks within a process or across functions, (2) automate routine tasks, (3) provide detailed insight regarding organizational and individual employee performance, or (4) standardize common tasks and processes.

Thus far, research on CRM has identified several key factors that contribute to the successful implementation of CRM technologies (e.g., Ryals and Payne 2001; Wilson, Daniel, and McDonald 2002; Winer 2001), particularly sales force automation (SFA) tools, which represent one of the key components of CRM systems (e.g., Morgan and Inks 2001; Pullig, Maxham, and Hair 2002). Early empirical work and anecdotal evidence seem to suggest that the failure of these initiatives is, in part, being prompted by limited user acceptance of the implemented technology (Speier and Venkatesh 2002) and inadequacies in the adopting organization's culture and structure (Massey, Montoya-Weiss, and Holcom 2001; Ryals and Knox 2001). More specifically, as is illustrated in Table 2, numerous cultural and structural factors have been cited as, or been empirically linked to, the success of CRM initiatives. Although a detailed review of these organizational factors is not warranted here, it is worth noting that they can influence multiple aspects of CRM initiatives, including (1) the relative success of CRM technology deployment efforts, (2) extent of end user utilization of CRM technology, and (3) firms' ability to ultimately benefit from their CRM investments (i.e., achieve an acceptable return on their CRM investments).

Technology Usage Behaviors

The numerous CRM implementation success factors identified in Table 2 are similar to those often cited in the IT literature (e.g., Morris and Venkatesh 2000; Speier and Venkatesh 2002). This is not surprising, given that the failure of IT initiatives is not uncommon and has been extensively researched (cf. Keil, Mann, and Rai 2000; Tait and Vessey 1988; Wastell 1999). To date, the work of Venkatesh et al. (2003) represents the most aggressive attempt to develop a unified framework for understanding individuals' technology usage behaviors. In their effort, Venkatesh and his colleagues review eight widely cited technology usage models¹ and, based on their review, develop and test a Unified Theory of Acceptance and Use of Technology. In order to do so, the authors group highly similar constructs employed across the eight different models and develop a parsimonious set of technology usage antecedent and moderating factors. More specifically, their model identifies four critical antecedents to technology usage behaviors (performance expectancy, effort expectancy, social influence,

Table 2
Critical Success Factors of CRM Implementation Efforts

Factor/Characteristic	Sources
1. Customer Orientation	Rigby, Reichheld, and Schefter (2002); Ryals and Knox (2001); Ryals and Payne (2001); Sheth and Sisodia (2001); Wilson, Daniel, and McDonald (2002)
2. Long-Term Orientation	Ryals and Knox (2001)
3. Cross-Functional Integration	Massey, Montoya-Weiss, and Holcom (2001); Ryals and Knox (2001); Wilson, Daniel, and McDonald (2002)
4. Organization-Wide Commitment	Ryals and Knox (2001)
5. Specification of Customer Data Ownership	Massey, Montoya-Weiss, and Holcom (2001); Ryals and Payne (2001)
6. CRM Training/Specialized Skill Development	Ryals and Payne (2001); Shoemaker (2001)
7. Presence of CRM Champion	Ryals and Knox (2001); Ryals and Payne (2001); Wilson, Daniel, and McDonald (2002)
8. Top Management Buy-In	Yu (2001)
9. Compensation Structure Congruent with CRM Philosophy	Davids (1999); Sheth and Sisodia (2001); Shoemaker (2001)
10. Focus on Change Management	Rigby, Reichheld, and Schefter (2002); Wilson, Daniel, and McDonald (2002); Yu (2001)
11. Phased Technology/Strategy Implementation	Wilson, Daniel, and McDonald (2002)
12. Failure to Understand Benefits	Ryals and Payne (2001)
13. Poor Data Quality/Quantity	Ryals and Payne (2001)
14. Adequate Performance Metrics (i.e., ROI for CRM)	Ryals and Knox (2001); Ryals and Payne (2001); Winer (2001)
15. Adequate Financial Commitment	Ryals and Payne (2001); Yu (2001)

and facilitating conditions) as well as four variables (gender, age, experience, and voluntariness of use) that moderate the relationship between the antecedents and individual's usage intentions and behaviors.

However, it is important to note that the constructs advanced in the Unified Theory of Acceptance and Use of Technology (and the eight foundational models from which the theory originates) *relate primarily to end users' perceptions of the system* (i.e., the system's likely effect on their job performance and ease of using the system) and *their work environment as it relates to system usage* (i.e., how their level of system usage will be viewed by referent others and their level of access to the resources needed to use the system). In the terminology used within this paper, these constructs relate to users' perceptions of the extent to which a "gap" (labeled herein as a "technology–employee gap") exists between the (1) effort, (2) skills, and (3) resources needed to use the technological tool (i.e., system), and (1) the job performance and social benefits it confers to them, (2) their technology-related skill set, and (3) organizational resources made available to them that make system usage possible.

The conceptual model proposed in this effort suggests that two other types of "gaps" are likely to result when the implementation of CRM technology is evaluated within the broader context of CRM initiatives. As was previously indicated, aside from the adoption and implementation of new technological

tools, successful CRM initiatives are characterized by extensive business process innovation that is aimed at achieving the cross-functional coordination needed to effectively manage customer relationships (Hansotia 2002; Massey, Montoya-Weiss, and Holcom 2001; Rigby, Reichheld, and Schefter 2002; Ryals and Knox 2001; Wilson, Daniel, and McDonald 2002). Consequently, to the extent that firms undertake or fail to undertake the (co)innovation initiatives needed to align the new technological tools with their business processes, additional implementation "gaps" may result. *The conceptual model advanced herein contends that these additional "gaps" also exert influence upon individuals' technology usage behaviors*, and, as will be more thoroughly described in the sections that follow, are the result of firm's inability to (1) align business processes with the new CRM tools being implemented, and (2) achieve employee buy-in of the reengineered CRM processes that, potentially, have a significant effect on their roles within the firm (cf. Shoemaker 2001).

The Management of Change

The adoption and implementation of CRM technology is often framed as an organizational innovation process (Pullig, Maxham, and Hair 2002) that requires a focus on change management (Rigby, Reichheld, and Schefter 2002; Yu 2001). Thus, the insights afforded by the extensive change manage-

ment literature (e.g., Aiken and Hage 1971; Brown and Starkey 2000; Daft 1978; Damanpour 1991; Rowden 2001) seem particularly relevant when attempting to understand the factors that drive end user acceptance of CRM technology. The conceptual model advanced in this effort builds on this rich literature stream by modeling critical change management factors as antecedent to the different CRM implementation gaps. However, in a departure from the change management literature—which often focuses on macro-level strategies and approaches for successfully implementing organizational innovations—this paper places CRM implementation under a microscope and explicitly considers how the interaction between the different elements of an innovation initiative affect end user technology acceptance.

In light of the arguments presented in the preceding paragraphs, it seems fair to assume that an evaluation of the interplay between people, processes, and technology within the context of CRM initiatives will provide for a better understanding of the factors that influence end user acceptance of CRM technology. That is, it appears that by taking into account end users' technology–employee, employee–process, and process–technology “gap” perceptions, it is possible to advance a more comprehensive explanation of why acceptance of CRM technology varies across users and across firms. Unlike extant theories, which focus primarily on end users' relationship to the system and the relative effectiveness of broad change management strategies, the conceptual model proposed within this manuscript represents a first step toward that end.

CONCEPTUAL MODEL AND RESEARCH PROPOSITIONS

Figure 1 is a graphical representation of the proposed conceptual model. It illustrates that the likelihood that end users assimilate CRM technology is a direct consequence of the cognitive dissonance generated by the CRM innovation initiative. Innovation-related cognitive dissonance, in turn, is modeled as the result of end users' employee–process, technology–employee, and process–technology gap perceptions. Finally, four groups of variables (organizational environment, end user characteristics, change management efforts, and external support) are posited as antecedents to end users' gap perceptions. Theory and empirical evidence in support of the proposed conceptual model are provided in the pages that follow.

The Theory of Cognitive Dissonance

Festinger's (1962) theory of cognitive dissonance is based on the notion that individuals strive to achieve consistency in their beliefs and behaviors. Dissonance or tension is thought to result when individuals experience new events or are exposed to new information that results in cognitions that are

incongruent or at odds with each other. The resulting tension, in turn, is thought to be uncomfortable and to motivate individuals to seek ways in which consonance between the cognitive elements can be reestablished. Dissonance reduction can be achieved through changes in behavior (and the corresponding behavioral cognitive elements), changes in beliefs, or selective exposure to new information. However, resistance to dissonance reduction through behavioral change may occur when (1) the change is considered painful or involves loss, (2) the present behavior is satisfying, and (3) making the change is not possible. Finally, evidence suggests that forced compliance with dissonance-producing changes—through the use of rewards or threats—does not lead to meaningful cognitive change.

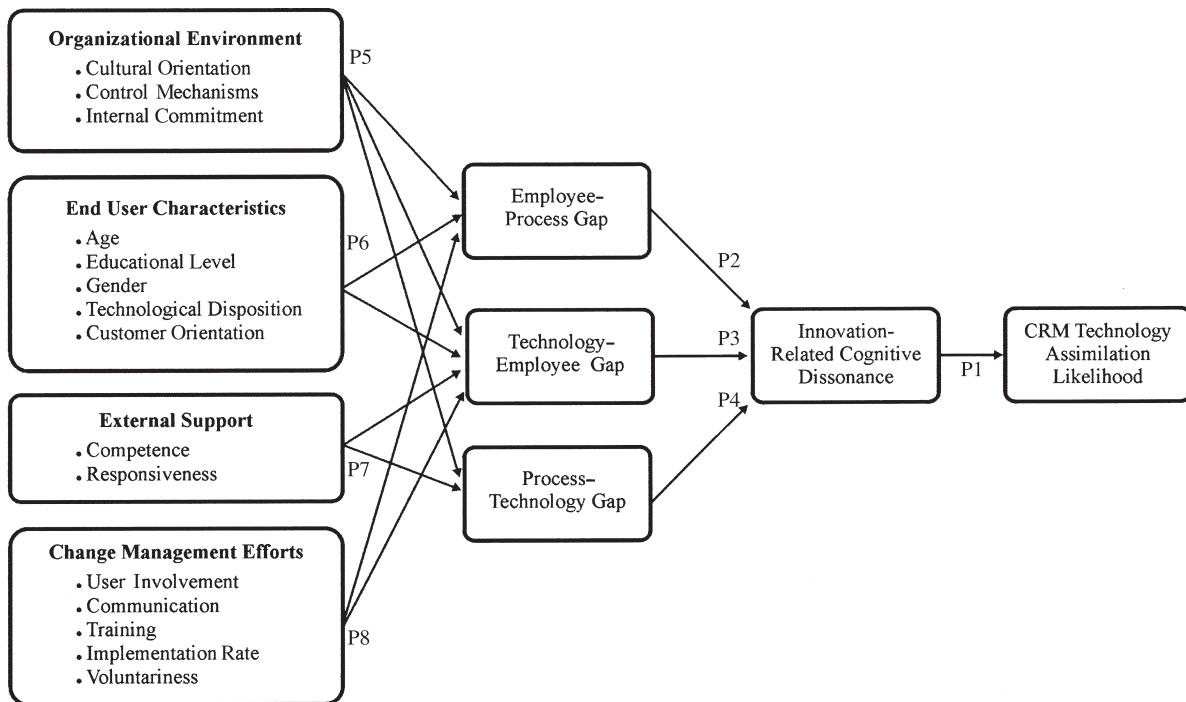
Although cognitive dissonance theory has mainly been utilized in marketing to explain postpurchase behavior (e.g., Hunt 1970), it is also highly relevant in an organizational innovation context. Regardless of their specific nature, organizational CRM initiatives imply change. If the changes are consonant with employees' belief structures, it is highly likely that individual-level adoption of the innovation will ensue. However, to the extent that employees perceive the resulting changes to be a mistake, or a “step in the wrong direction,” or simply undesirable, innovation-related cognitive dissonance will result (Reger et al. 1994). The resulting dissonance will, in turn, motivate organizational members to attempt to reestablish consonance through either a realignment of their belief structure or the (active or passive) resistance of the change initiative. The path individuals choose in their effort to reestablish consonance will likely be expressed through their technology usage behaviors. That is, if individuals grow to accept the changes brought about by the innovation initiative (i.e., change their belief structure), adoption of CRM technology is likely to result. However, if individuals elect to actively or passively resist the change initiative, end user adoption or appropriate use of CRM technology is unlikely.

Innovation-Related Cognitive Dissonance and the Assimilation of CRM Technology

Innovation-Related Cognitive Dissonance

The term, *innovation-related cognitive dissonance* is used here to refer to the postimplementation tension or discomfort individual employees experience as a consequence of their firms' CRM-related innovation efforts. Before moving forward, it is worth emphasizing two aspects of the preceding definition. First, it indicates that innovation-related cognitive dissonance is a postimplementation phenomenon. That is, it refers to employee-felt tension or discomfort that results after a CRM-related innovation has been put into full use and its role within the organization has become evident (cf. Rogers

Figure 1
The Cognitive Dissonance Model of Organizational Innovation



1995). Second, the definition indicates that the construct's domain includes cognitive tension or discomfort generated by *CRM-related innovation efforts*, as opposed to simply the deployment of CRM technology. Hence, the construct accounts for the combined effect of multiple, potentially concurrent, organizational innovation efforts (e.g., technological and business process innovations) aimed at enhancing firms' CRM capabilities.

Before proceeding to discuss how innovation-related cognitive dissonance influences the likelihood that CRM technology will be assimilated by employees, it is worth making a few remarks about how the construct can be operationalized. Studies focusing on postpurchase consumer behavior have relied on measures of posttransaction anxiety as indicators of individuals' level of experienced cognitive dissonance (e.g., Bell 1967; Hawkins 1972; Hunt 1970). Hence, in a similar manner, innovation-related cognitive dissonance can be assessed by asking individual employees to report on their postimplementation assessment of the innovation effort. For instance, the construct could be measured by determining the extent to which employees believe the CRM innovation initiative was (1) in the best interests of the firm, (2) worth it, (3) undertaken after careful evaluation of all available alternatives, (4) carefully thought through, (5) the right "move" for the company at the "right" time, (6) carried out with the help of an "appropriate" implementation partner, (7) a mistake, (8) hastily undertaken, and so on.

CRM Technology Assimilation Likelihood

Assimilation refers to the extent to which the use of CRM tools has diffused across organizational work processes and become routinized in the activities of those processes (Purvis, Sambamurthy, and Zmud 2001). *CRM technology assimilation likelihood*, then, refers to the probability that individual employees will utilize, on an ongoing basis, CRM tools deployed by the firm to aid them in the execution of day-to-day activities. As logic would suggest, empirical evidence reveals that user support for (Marshall and Vredenburg 1992), and usage of (Speier and Venkatesh 2002), an innovation increases when it is deemed to be compatible with the organization and its members. Therefore, it is reasonable to expect that the assimilation of CRM tools, at the individual employee level, is likely to ensue if the levels of cognitive dissonance generated by CRM innovation initiatives are relatively low. This conclusion extends directly from cognitive dissonance theory—if an innovation initiative is deemed to be compatible, consonance can only be maintained (i.e., dissonance can only be avoided) through the adoption of CRM technology (Festinger 1962). Hence, in an attempt to avoid the discomfort produced by cognitive dissonance, employees will be motivated to use CRM tools.

In contrast, when an innovation initiative produces cognitive dissonance and employees are unable or unwilling to alter their belief structures, resistance is likely to result (Festinger

1962). When such a situation exists, resistance provides individuals with an avenue through which they can minimize the discomfort generated by the change effort. Although resistance is traditionally conceptualized as a force moving in the direction of maintaining the status quo (Lewin 1952), Piderit (2000) suggests that resistance can be viewed as either a behavior, an emotion, or a belief. Thus, resistance to change can be expressed through (1) the articulation of strong negative beliefs (e.g., this change will damage the company's reputation), (2) the display of strong negative emotions (e.g., anger, fear, etc.), or (3) behavioral opposition (i.e., intent to oppose the change effort). Furthermore, the resistance literature suggests that behavioral opposition can be expressed as (1) outright aggression against the innovation or sabotage, (2) behind-the-scenes resistance, and (3) apathy (i.e., passive resistance or dropping out) (Caruth, Middlebrook, and Rachel 1985). In the case of CRM initiatives, behavioral resistance will, in part, be expressed by employees' unwillingness to adopt CRM tools or utilize them properly. The following proposition formally states the expected relationship:

P1: Innovation-related cognitive dissonance is inversely related to the likelihood that end users will assimilate CRM technology.

Antecedents of Innovation-Related Cognitive Dissonance

As was previously indicated, CRM tools are intended to enhance firms' ability to more productively manage their customer relationships. That is, rather than simply providing for a more efficient way to undertake relationship development and maintenance tasks, CRM tools are also designed to make it possible for firms to undertake these tasks in new, more effective ways (cf. Massey, Montoya-Weiss, and Holcom 2001). As a consequence, business process innovation is typically a big component of CRM initiatives. In fact, CRM consultants, providers, and implementation specialists have hundreds of pages of "best practice" business process maps that detail how CRM technology makes it possible for firms to achieve the same (desired) business outcomes (e.g., customer satisfaction, loyalty, cross-sales) in new, more productive ways (e.g., Siebel Systems 2004).

Due to their focus on business process innovation, CRM initiatives may have an effect not only on *how* employees do what they do but also on *what* they do on a daily basis. Changes to existing business processes will likely be required for firms to be able to benefit from the advantages offered by CRM technology. The challenging task for firms is to decide how much change to undertake and when to undertake it. If changes to business processes are minimized in order to help reduce the disruption caused by the innovation effort, firms' investments in CRM technology are not likely to generate

the benefits that prompted its adoption. It appears that achieving an appropriate balance between employees, processes, and technology within the context of CRM initiatives is likely to be a difficult proposition for most organizations. To the extent that employees perceive that a misalignment exists between these three organizational elements, CRM innovation gaps will result. As is discussed in the paragraphs that follow, these gaps produce the innovation-related cognitive dissonance that fuels end user resistance to CRM technology.

Employee-Process Gap

The employee-process gap refers to the extent to which employees perceive that (1) the business processes they are responsible for are *appropriately* defined *and* (2) they possess the skill set needed to execute those business processes as defined. In the preceding definition, the *appropriateness* criterion relates to the degree to which employees consider the organizational process flows they participate in to be the *best way* to achieve a given business outcome (e.g., closing a sale). Moreover, the employee-process gap is also concerned with individuals' perceptions of whether they are able to effectively execute, given their skill set, the tasks that form part of organizational processes. Dissonance is likely to result as the perceived incongruity between these organizational elements rises.

In summary, the employee-process gap represents discrepancies between (1) how employees believe processes should be defined and how they perceive them to be defined, and (2) the skills employees believe are needed to execute business process and the skills they perceive they have. To the extent individuals perceive that an employee-process gap exists, they are likely to experience innovation-related cognitive dissonance. This expectation is formally captured by the following proposition:

P2: As the employee-process gap increases, so does the amount of innovation-related cognitive dissonance employees experience.

Technology-Employee Gap

The technology-employee gap refers to the extent to which employees perceive that (1) the *appropriate* CRM tools were deployed by the firm, *and* (2) they have the skill set/resources needed to utilize those CRM tools. As was previously indicated, the technology-employee gap is typically the focus of most technology acceptance models, which examine, among other things, the discrepancy between end users' perceptions of the (1) effort needed to use a tool and the benefits it confers, and (2) skills needed to use the tool and skills held (e.g., Speier and Venkatesh 2002; Venkatesh et al. 2003). As defined here, the technology-employee gap refers to these same

elements. That is, it is concerned with employees' perceptions about the tools that were deployed and their ability to use them, such as: Were the right tools selected? Are they user-friendly? Do I have the skills needed to use/benefit from these tools?

To summarize, the technology–employee gap represents discrepancies between (1) the features employees believe CRM tools should have and the features they perceive the deployed CRM tools have, and (2) the skills employees believe are needed to utilize the CRM tools that were adopted and their perceptions about the skills they have. To the extent employees hold discrepant thoughts about the preceding innovation-related elements, cognitive dissonance is likely to follow. The third proposition formally restates this expectation:

P3: As the technology–employee gap increases, so does the amount of innovation-related cognitive dissonance employees experience.

Process–Technology Gap

The process–technology gap refers to the extent to which employees perceive that (1) the business processes they are responsible for are *appropriately* defined and (2) deployed CRM tools support business processes as defined. Again, appropriateness here refers to the degree to which employees view a given process flow as the best way to achieve a desired business objective. The process–technology gap is the greatest when employees disagree with how processes have been defined and consider the technology deployed to provide inadequate support for the processes as they have been defined. If employees are in complete disagreement with how processes have been defined but view the technology as being supportive of those processes, a perceived gap still exists but is smaller in magnitude. If, as is assumed in extant technology acceptance models, employees are in complete agreement with the processes but view the technology as inadequate, the size of the gap diminishes, and the primary issue becomes one of perceived usefulness of the technological tool.

In summary, the process–technology gap represents discrepancies between (1) how employees believe processes should be defined and how they perceive them to be defined, and (2) the process-support employees believe CRM tools should provide and the support they consider the tools actually provide. To the extent individuals perceive that a process–technology gap exists, they are likely to experience innovation-related cognitive dissonance. The following proposition restates this expectation:

P4: As the process–technology gap increases, so does the amount of innovation-related cognitive dissonance employees experience.

DETERMINANTS OF END USERS' "GAP" PERCEPTIONS

Building on the IT and change management literature, this section details how end users' innovation gap perceptions are influenced by (1) organizational characteristics, (2) employee characteristics, (3) the nature of external support provided, and (4) change management efforts. Stated differently, the pages that follow identify and propose numerous factors that are likely to have an effect on employees' innovation gap perceptions.

Organizational Characteristics

Cultural and Structural Orientation

It has been suggested that learning organizations are better equipped to handle change (Rowden 2001), and that organizational learning can be utilized to overcome resistance to change (Brown and Starkey 2000). In their early work on innovation, Zaltman, Duncan, and Holbek (1973) posit that the successful implementation of organizational innovations is more likely when the unit of adoption has norms that favor change. In fact, empirical evidence indicates that a learning orientation is positively related to organizational innovation (Hurley and Hult 1998) and innovative capacity (Calantone, Cavusgil, and Zhao 2002). This finding is consistent with the notion that the hallmark of a learning orientation is open-mindedness or the willingness to critically evaluate existing routines and embrace new ideas (Calantone, Cavusgil, and Zhao 2002).

Slater and Narver (1995) describe the learning organization as a market-oriented firm with an organic structure that favors entrepreneurship and is characterized by facilitative leadership and decentralized strategic planning. Separate empirical studies have linked most of the components of a learning organization to innovation or innovative capacity. Specifically, organizational innovation has been found to be positively related to an organic structure (Aiken and Hage 1971), decentralized decision making (Aiken and Hage 1971; Damanpour 1991; Grover and Goslar 1993), a history of successful innovation (Aiken and Hage 1971; Parthasarathy and Sohi 1997), and the customer orientation of employees (Pullig, Maxham, and Hair 2002).

A firm's culture plays a critical role in shaping individuals' perceptions of a change initiative before the decision to adopt an innovation is made (i.e., during the initiation stage of innovation). Culture exerts its influence by shaping individuals' assessment of an innovation effort, even when the specific consequences of such an effort remain unclear. In the case of learning organizations—where change is the norm—innovation is embraced as a distinct component of the firm's identity. Thus,

individuals within learning organizations are more likely to approach innovation initiatives as an opportunity to acquire new, valuable skills that can be leveraged to enhance their job performance and achieve organizational objectives. To the extent that this is true, it is reasonable to expect that individuals within learning organizations will possess higher levels of confidence in their skill set and that of their colleagues as it relates to the understanding and execution of new business processes and the use of technological innovations. These expectations are captured in the following proposition:

P5a: An organizational learning orientation is inversely related to employee–process, technology–employee, and process–technology gap perceptions.

Control Mechanisms

In their influential work on employee control systems, Anderson and Oliver (1987) distinguish between two different methods for monitoring, evaluating, and compensating employees: outcome- and behavior-based control systems. In outcome-based control systems, there is little monitoring or managerial direction, and compensation is based on objective measures of performance (e.g., sales volume). In contrast, behavior-based control systems are characterized by significant managerial direction and monitoring, and compensation is based on subjective measures of performance, such as product knowledge and customer satisfaction. In addition, data from a follow-up study performed by Cravens and his colleagues (1993) suggests that behavior-based control systems are better suited for organizations that emphasize relationship-building strategies. More specifically, their findings reveal that behavior-based control systems are positively related to employees' (1) degree of customer orientation, (2) willingness to provide information, (3) team orientation, (4) professional competence, and (5) planning orientation.

From an employees' perspective, the undertaking of CRM initiatives implies that innovations will be implemented that will enable the firm to build stronger relationships with its customers. If employees' compensation hinges upon their ability to help foster relationships with customers, the CRM initiative is likely to be perceived as a step in the right direction. After all, the resulting innovations will enable them to do their jobs in a more efficient and effective manner, which can have a positive effect on their earning capabilities. However, if employees' compensation is unrelated to relationship building, the CRM initiative is likely to be viewed (at best) as an unfruitful investment or (at worst) as a hindrance. To these employees, the CRM innovations present no significant advantages (from a compensation standpoint), and, yet, they will be required to invest significant amounts of time and energy in order to (1) learn to use and continually interact

with new technology, and (2) assume new process tasks/roles that arguably do not contribute to their objective performance. Stated differently, employees who are compensated based on the outcomes they achieve will likely not see significant net benefits in adopting CRM technology and will view cross-functional CRM processes as being a highly ineffective means toward achieving desired outcomes. Hence, the following relationships are expected:

P5b: Behavior-based (outcome-based) control mechanisms are inversely (positively) related to employee–process and technology–employee gap perceptions.

Internal Support and Commitment

Numerous studies have shown that organizational commitment to change (Cats-Baril and Jelassi 1994; Ginzberg 1978, 1981; Walton 1989) and management support for an innovation (Ettlie 1984; Leonard-Barton and Deschamps 1988) are positively related to implementation success. Empirical evidence also suggests that managerial and user support for an innovation are positively related to the resolution of implementation issues and, hence, to the success of the implementation effort (Marshall and Vredenburg 1992). Furthermore, several studies reveal that implementation success hinges upon the presence of a champion or top-level sponsor who is committed to seeing the innovation through (Ryals and Knox 2001; Wilson, Daniel, and McDonald 2002; Yu 2001). Internal support for and commitment to CRM initiatives also reinforce the notion that the innovation effort is in the best interest of the firm. That is, the more internal support and commitment CRM initiatives receive, the higher the likelihood employees will perceive reengineered business processes and CRM tools to be *appropriate* in nature (i.e., to be the right way to achieve business outcomes and the right CRM tools to get the job done). Consequently, the following proposition is put forth:

P5c: Internal support for and commitment to CRM initiatives is inversely related to employee–process and technology–employee gap perceptions.

User Characteristics

Numerous, individual-level factors—such as age, education level, and gender—shape employees' perceptions of an organizational innovation effort. Stated differently, individuals' perceptions of a change initiative are, in part, a function of who they are and of how they see themselves as part of the firm. Thus, individual-level factors help predetermine employees' response to innovation initiatives. Propositions regarding some of the most critical individual-level factors (in a CRM context) are presented in the remainder of this section.

Age

Empirical evidence suggests that as age increases, usage of technological innovations decreases (Morris and Venkatesh 2000). That is, age is inversely related to the routinization of new technology. In fact, research on SFA suggests that younger salespeople are more likely to adopt SFA technology than their older counterparts (Parthasarathy and Sohi 1997). Additional research on SFA has also revealed that age is inversely related to perceptions regarding the relative advantage of the technology and positively related to perceptions regarding its complexity (Speier and Venkatesh 2002). These findings suggest that older employees—given their skills sets—are less likely to perceive (vis-à-vis their younger counterparts) that CRM tools provide them with significant net benefits. In other words, they are more likely to perceive that a gap exists between the skills needed to utilize the tools and the skills they actually possess. The following research proposition formally restates the expected relationship:

P6a: Employee age is positively related to technology–employee gap perceptions.

Education Level

Based on an extensive survey of implementation literature, Meyers, Sivakumar, and Nakata (1999) conclude that the implementation of innovations is enhanced when employees in the adopting organization have a greater level of education. Their conclusion is based on the findings of numerous studies that identified a positive relationship between specialization and professionalism and the successful implementation of innovations. Moreover, research on SFA suggests that the more educated the user, the more likely he or she will be to adopt the new technology (Parthasarathy and Sohi 1997). Collectively, these findings suggest that as employees' education levels increase so does the likelihood they will feel confident that they possess the skills needed to execute redefined business processes and utilize newly deployed CRM tools. Thus, the following relationship is expected:

P6b: Employee education is inversely related to employee–process and technology–employee gap perceptions.

Gender

Recent studies on the effect of gender on the adoption of new technology suggest that males are more likely to embrace new technology than females. More specifically, a study by Venkatesh and Morris (2000) revealed that women have more negative perceptions about new technology and use new technology less than their male counterparts. Furthermore, the results of Speier and Venkatesh's (2002) study on SFA suggest

that perceptions regarding the complexity and relative advantage of SFA technology are gender dependent. Female employees, when compared to their male counterparts, are more likely to perceive that SFA technology is complex and offers less relative advantages. These findings indicate that male employees (vis-à-vis their female counterparts) are more likely to perceive that they possess the skill set needed to effectively utilize and benefit from newly deployed CRM tools. As a consequence, the following relationship is anticipated:

P6c: Male (female) employees are less (more) likely to perceive that a technology–employee gap exists.

Technological Disposition

Empirical evidence suggests that higher technical skills (Ram and Jung 1994) and computer self-efficacy (Venkatesh 2000) lead to the formation of positive attitudes toward new technology. Moreover, technical proficiency has also been positively linked to user satisfaction with new technology (Ram and Jung 1994). Finally, it has also been shown that prior experience with technology influences individuals' decision to adopt new technology (Parthasarathy and Sohi 1997). Collectively, these findings suggest that technologically disposed employees are more likely to feel confident that they possess the skill set needed to effectively utilize and benefit from CRM technology, and thus are less likely to perceive that a technology–employee gap exists. This expectation is formally restated in the proposition that follows:

P6d: Technological disposition is inversely related to technology–employee gap perceptions.

Customer Orientation

Customer orientation can be defined as an employee's willingness to undertake the necessary steps to satisfy individual customers' needs and build mutually beneficial relationships with them (Saxe and Weitz 1982). Considering that CRM initiatives are intended to enable firms to establish and strengthen customer relationships, it is reasonable to conclude that customer-oriented employees are more likely to have positive perceptions about CRM initiatives. In fact, customer orientation has been cited as one of the key success factors of CRM initiatives (e.g., Ryals and Knox 2001; Ryals and Payne 2001; Wilson, Daniel, and McDonald 2002); in addition, a recent study on the adoption and use of technology by salespeople revealed that there is a positive relationship between the customer orientation of employees and favorable attitudes toward computers (Keillor, Pettijohn, and d'Amico 2001). In light of this evidence, it is reasonable to conclude that as employees' customer orientation increases, so does the likelihood they will perceive reengineered (customer-centric) business

processes and CRM tools to be *appropriate* in nature (i.e., to be the right way to achieve business outcomes and the right tools to get the job done). Consequently, the following proposition is put forth:

P6e: Employee customer orientation is inversely related to employee–process and technology–employee gap perceptions.

External Support

External support refers to any type of assistance provided by a third party (i.e., an implementation partner) during the organizational innovation process (e.g., consultants, software manufacturers, resellers, etc.). An implementation partner's experience with and knowledge about a particular innovation can have a substantial effect on organizational members' perceptions of a change initiative. For example, implementation partners can set expectations regarding the implementation process and the performance of the innovation once it has been implemented. Furthermore, implementation partners have the expertise to map-out and coordinate the implementation process such that the deployment of the innovation runs smoothly, and organizational problems (i.e., intraorganizational conflict) stemming from the implementation of the innovation are minimized. Empirical evidence suggests that the implementation process is enhanced by the presence of an implementation partner, especially when such a partner possesses strong technical, communication, and project management skills (see Meyers, Sivakumar, and Nakata 1999). In the case of CRM initiatives, competent implementation partners can help reassure organizational members that (1) newly defined business processes represent "best practices" (i.e., proven ways that lead to desired business outcomes), and (2) a good fit exists between redefined business processes and the CRM tools being deployed. Given these expectations, the following proposition is put forth:

P7a: The perceived competence of implementation partners is inversely related to employee–process and process–technology gap perceptions.

In addition, research on CRM has identified a positive relationship between the perceived responsiveness of the implementation team and users' perception of configuration correctness (i.e., the extent to which the technology was configured according to user requests) (Gefen and Ridings 2002). Configuration correctness, in turn, was found to be positively related to user approval of CRM technology (Gefen and Ridings 2002). This evidence is congruent with Morgan and Inks' (2001) study on the implementation of SFA tools, where users' perceived influence over the implementation process was found to be positively related to user acceptance of the technology. Taken together, these findings suggest that

the implementation team's responsiveness to end user requests is likely to enhance employees' perceptions regarding the (1) appropriateness of CRM tools implemented (i.e., extent to which CRM tools possess the needed characteristics), and (2) fit between CRM tools and organizational business processes. These expectations are formally presented in the following proposition:

P7b: The perceived responsiveness of the implementation team is inversely related to technology–employee and process–technology gap perceptions.

Change Management

Change management practices—such as user involvement, communication, and training—are critical to the success of any organizational innovation effort, especially when the innovation represents a significant departure from existing organizational standards. In general, change management activities empower, inform, and allow organizational members to exert a significant degree of influence over the innovation effort. From an employee's perspective, such activities make the proposed changes seem more palatable and even compatible with organizational goals. Even when organizational and individual-level characteristics predispose employees unfavorably toward a particular innovation, change management activities can be effectively utilized to gain user acceptance of an innovation. Propositions regarding some of the most critical change management practices are presented in the remainder of this section.

User Involvement

User involvement in organizational change initiatives is a highly effective change management practice. Numerous studies have identified a positive relationship between user involvement in organizational innovation efforts and implementation success (Hage 1986; Mirvis, Sales, and Hackett 1991). In addition, research indicates that involvement is inversely related to user stress regarding the innovation and resistance to the innovation. In the case of CRM initiatives, user involvement should help minimize innovation gaps, because it enables employees to exert influence over the innovation process and, thus, enhances the likelihood that the resulting changes (i.e., new processes and tools) will be perceived to be *appropriate* in nature (i.e., new processes are the right way to achieve business outcomes, and the right CRM tools were deployed). The expected relationships are outlined in the proposition that follows:

P8a: User involvement in the implementation effort is inversely related to employee–process and technology–employee gap perceptions.

Communication

Effective intraorganizational communication is a necessary component of any major change initiative. Prior research conclusively indicates that high levels of intraorganizational communication are positively related to implementation success (Damanpour 1991; Howard and Rai 1993). Moreover, research on SFA suggests that communication between employees is likely to have an effect on the adoption of new technology—if positive information regarding the innovation is transmitted between employees, adoption is likely to ensue (Parthasarathy and Sohi 1997). These findings indicate that communication enhances the outcomes of innovation efforts by effectively shaping employees' perceptions regarding the effect of the change effort. As it pertains to CRM initiatives, effective communication can help minimize innovation gaps by influencing employees' perceptions regarding the benefits conferred by the reengineered business processes and new technological tools. In other words, communication about the innovation effort serves to influence employees' perceptions about how the innovation effort better enables the firm to achieve desired business outcomes. The proposition below captures this expectation:

P8b: Innovation-related communication is inversely related to employee–process and technology–employee gap perceptions.

Training

Training is critical in helping employees overcome the uncertainty generated by organizational innovation efforts. It enables employees to acquire the skills they need to continue to be productive members of the organization, even after the innovation has been deployed. Previous research has overwhelmingly found that training is positively related to implementation success (Alavi and Joachimsthaler 1992; Mirvis, Sales, and Hackett 1991; Newell, Swan, and Clark 1993). Furthermore, a study on SFA implementation indicates that user acceptance of the technology is enhanced when employees perceive that adequate training will be provided. Thus, by enhancing users' confidence in their ability to execute redefined business processes and utilize technological tools, employee training helps minimize CRM innovation gaps. These expectations are formally restated in the following proposition:

P8c: Innovation-related training is inversely related to employee–process and technology–employee gap perceptions.

Implementation Rate

The rate at which organizational change (i.e., an innovation) is implemented can have significant consequences on how it

is perceived by employees and, thus, on the ultimate outcome of a change initiative. More specifically, it is believed that incremental (as opposed to radical) change aids in achieving the successful implementation of an innovation (Ettlie 1986). This finding is confirmed by Vasilash's (1989) study of the implementation of industrial robots in Japan, which revealed that decreased resistance to change results when new technology is incrementally phased in. By definition, radical innovation efforts depart significantly more from the status quo than do incremental change initiatives and provide less opportunity for those affected to adjust to the change. Consequently, the more an innovation departs from existing organizational standards and practices, the less likely it is employees will perceive that they have the skills needed to adopt, execute, and benefit from those innovations. In the case of CRM initiatives, as the implementation rate increases, employees' confidence in their ability to execute redefined business processes and utilize CRM tools is likely to decrease. Given these expectations, the following proposition is put forth:

P8d: Implementation rate is inversely related to employee–process and technology–employee gap perceptions.

Voluntariness

Forced compliance with a change initiative is unlikely to result in users' acceptance of an innovation (Festinger 1962). This sentiment is echoed by Burnes and James (1995), who suggest that forced compliance is, in fact, likely to generate negative feelings toward an organizational innovation effort. Speier and Venkatesh's (2002) study on the implementation of SFA technology also revealed that voluntariness is positively related to users' perceptions of the relative advantages offered by SFA technology. Stated differently, employees are more likely to perceive that a technological tool is a good fit for them if its adoption is deemed voluntary (i.e., if they feel it was their decision to begin using the tool). Therefore, the following relationship is expected:

P8e: Voluntariness is inversely related to technology–employee gap perceptions.

MANAGERIAL IMPLICATIONS

This effort identified several issues regarding CRM innovation initiatives that are of great consequence to practitioners. It suggests that in order for CRM initiatives to be successful, management should focus on aligning the constituent elements (people, processes, and technology) of the CRM process. Failure to align these elements leads to three types of innovation gaps that are likely to hinder the assimilation of CRM technology. The first of these gaps is one between em-

ployees and processes. This gap results from the failure to achieve employee buy-in of redefined business processes and to provide employees with the training/resources they need to execute these redefined business processes. The second gap is the technology–employee gap that results from an inability to provide employees with an understanding of the benefits CRM tools confer and to help employees develop the skills they need to benefit from using the technology. Finally, the process–technology gap is generated when process roles are not adequately defined, and deployed CRM tools are not designed to provide adequate support for organizational processes as they have been defined.

This effort also highlights the critical role change management can play in an organization's quest to achieve employee assimilation of CRM technology. Despite the fact that users' perceptions of CRM technology are influenced by several factors that are typically beyond management's immediate control (e.g., user characteristics, organizational culture), managers can utilize change management practices to effectively minimize the size of resulting CRM-related innovation gaps. Broadly speaking, change management activities empower organizational members and allow them to exert a significant degree of influence over the innovation process. In so doing, their perceptions of CRM technology and the redefined business processes become more positive, thus leading to their support of the innovations. By managing the changes from the start, management can maximize the likelihood that the eventual implementation of the process and technology innovations will be successful.

Change management implies that managers should involve employees, from all levels of the firm, in the multiple stages of the adoption and implementation process. Employees should have a say in determining what technology should be adopted. If adoption is deemed appropriate, employees should be actively involved in deciding how and when the technology should be deployed. Effective change management also implies that employees should be kept aware, at all times, of the progress of the implementation effort and of how the pending changes are likely to affect them personally. Training should be a critical component of the change management process. The adoption of CRM technology and new processes is likely to create uncertainty and apprehension among those employees who fear that they do not have the skills to effectively operate in a more technologically sophisticated environment. By providing employees with specialized training, management can help minimize their fears and enhance the likelihood that they will embrace the changes. Effective change management also requires that employees be allowed to assimilate the new technology at their own pace. By making the adoption decision seem voluntary, managers enable employees to retain control over their "organizational destiny." Eventually, as the benefits of CRM technology become more

apparent, employees will begin to willingly embrace it. Finally, managers should ensure that changes are implemented in a gradual manner so that organizational members have the opportunity to successfully adjust or become acclimated as their environment changes.

A third managerial insight derived from the literature relates to the fact that resistance to CRM technology is likely to ensue when organizational members perceive that the changes that accompany CRM initiatives are incompatible with the organization or themselves. Thus, managers should not only attempt to influence individual's perceptions of the innovation effort through effective change management, but they should also plan for the possibility that some organizational members will ultimately be unable or unwilling to embrace CRM-related innovations. That is, before CRM initiatives are undertaken, managers should have a plan to integrate "legacy employees" so that they can continue to be productive members of the organization.

A fourth implication derived from the literature relates to the importance of selecting a competent and responsive implementation partner. In selecting an external partner to help with the CRM innovation effort, management should ensure that the partner not only possesses the CRM "know-how" but also has the "people skills" needed to interact with and resolve concerns generated by organizational members throughout the course of the implementation process. A competent and responsive implementation partner can enhance the likelihood that employees adopt and use CRM technology by helping to minimize the technology–employee and process–technology gaps that result as a consequence of CRM innovation initiatives.

Finally, this effort suggests that managers would be well served by first reengineering and gaining employee buy-in to business processes and then proceeding with the deployment of CRM technology (see, e.g., Rigby, Reichheld, and Scheffer 2002). Such an approach would serve to enhance the perceived value of CRM tools and would thus minimize perceived innovation gaps. To the extent that the reengineering of business processes is not possible as a first step, because their execution is dependent upon the availability of CRM technology, managers should focus on deploying innovations related to a single, manageable process or subprocess. Doing so would enable employees to gradually become accustomed not only to CRM technology but also to the new process roles and tasks they are expected to undertake.

RESEARCH IMPLICATIONS

The conceptual model advanced in this effort differs from other explanations offered in the literature in that it *explicitly considers the effect of concurrent innovation efforts on technology acceptance*. As a consequence of the view adopted in this pa-

per, it is possible to evaluate how the interplay between the three critical elements of CRM initiatives—people, processes, and technology—influences employees' technology usage behaviors. By recognizing that all other organizational elements do not remain constant at the time the technological tool is being deployed, the dynamic view adopted herein provides for a much richer explanation of why employee resistance to CRM technology is likely to develop. Hence, this effort suggests that in order to better understand employees' technology usage behaviors, future research should look beyond the user–system relationship and examine how co-innovation initiatives and other changing elements within the user environment influence attitudes toward technology usage. The various propositions put forward here should be tested in the CRM implementation context with a specific focus on the employee–process and process–technology gaps, which have received relatively less attention.

Although the IT literature has made an attempt to evaluate the effect of technology and IT infrastructure on the success of business process innovation initiatives (e.g., Broadbent, Weill, and St. Clair 1999), it appears no effort has been made to examine the reverse relationship. That is, to what extent do business process innovations (whether they precede, are concurrent with, or follow the deployment of new technology) influence end user resistance to new technological tools? This paper makes a substantive contribution toward that end by raising the possibility that end user technology resistance might result as a consequence of tensions created by the concurrent implementation of business process innovations. Future research should focus on empirically examining the extent to which concurrent innovation efforts fuel end user resistance to technology.

This effort also highlights the explanatory power afforded by cognitive dissonance theory as it relates to organizational innovation. Although it is not commonly employed in the marketing literature beyond the postpurchase consumer setting, cognitive dissonance theory provides a powerful rationale as to why the misalignment of organizational elements that form part of innovation initiatives will likely lead to resistance and failure. In addition, the use of cognitive dissonance theory within this effort suggests the importance of focusing on the fit or lack of fit (i.e., gap) between the component elements of organizational innovation initiatives (e.g., Speier and Venkatesh 2002). That is, in trying to understand why resistance to an innovation develops, research should focus on the perceived fit between organizational elements as opposed to an innovation's attributes.

The proposed conceptual model represents only a first step toward developing a more comprehensive understanding of the factors that influence employee acceptance of CRM technology—an empirical evaluation of the model is a logical next step. In addition, it is possible to further the ideas advanced

within this paper. For instance, it would be interesting to consider whether the relationship between the four sets of antecedent factors (organizational environment, end user characteristics, change management efforts, and external support) and the innovation gaps is moderated by the stage of the innovation process (see Rogers 1995). For instance, does the effect of age on technology–employee gap perceptions change as the innovation process moves forward from initiation to the redefining, clarifying, and routinization stages of implementation? Finally, it would be possible to extend the proposed model by considering the effect of factors related to postimplementation dissonance reduction. In particular, it would be valuable to examine whether dissonance reduction activities (e.g., continued communication efforts, innovation maintenance, etc.) operate in the same manner within this (organizational innovation) context as they do in consumer settings (e.g., Bell 1967; Hunt 1970).

NOTE

1. The models/theories of technology acceptance and usage reviewed by Venkatesh et al. (2003) include: (1) theory of reasoned action, (2) technology acceptance model (TAM), (3) motivational model, (4) theory of planned behavior (TPB), (5) combined TAM and TPB, (6) model of PC utilization, (7) innovation diffusion theory, and (8) social cognitive theory.

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