Satish Jayachandran, Subhash Sharma, Peter Kaufman, & Pushkala Raman

The Role of Relational Information Processes and Technology Use in Customer Relationship Management

Drawing on the relationship marketing and market information processing literature streams, the authors conceptualize and measure relational information processes, or organizational routines that are critical for customer relationship management (CRM). The authors examine the key drivers and outcome of relational information processes and the role of technology in implementing CRM using data collected from a diverse sample of firms. The results show that relational information processes play a vital role in enhancing an organization's customer relationship performance. By moderating the influence of relational information processes on customer relationship performance, technology used for CRM performs an important and supportive role. The study provides insights into why the use of CRM technology might not always deliver the expected customer relationship performance outcome.

Relationship marketing scholars have long advocated that pursuing long-tem relationships with customers instead of a transaction-oriented approach is more profitable for firms (e.g., Morgan and Hunt 1994). Customer relationship management (CRM) is a core organizational process that focuses on establishing, maintaining, and enhancing long-term associations with customers (Srivastava, Shervani, and Fahey 1999). The rapid advance in information technology (IT) has presented firms with new technology-based solutions—namely, CRM technology—to manage customer relationships. Such technology is a suite of IT solutions designed to support the CRM process (Rigby, Reichheld, and Schefter 2002). Many firms have invested in CRM technology (Day 2000), hoping to discriminate between profitable and unprofitable customers, provide customized service, and obtain greater customer retention (Peppers, Rogers, and Dorf 1999). However, the results of using CRM technology have been mixed (e.g., Reinartz, Krafft, and Hoyer 2004), and this has created substantial concern about its viability and effectiveness (Rigby, Reichheld, and Schefter 2002). The business press also gives conflicting accounts about the efficacy of CRM technology (e.g., Whiting 2001), and research on this issue has been limited (Winer 2001).

The unease with CRM technology use is similar to the disillusionment that firms encountered in the late 1980s with the use of IT to automate business activities. The frustration with IT systems led to a focus on information process redesign in organizations to take advantage of the technology (see El-Sawy 2001). Akin to the situation with the use of IT systems in organizations, disappointing outcomes from CRM technology use could be the result of inappropriate information processes. Therefore, research exploring organizational information processes relevant to CRM (hereafter, relational information processes) could help shed light on the role of CRM technology in firms.

To address this need, the objectives of this study are to conceptualize and examine the roles of relational information processes and CRM technology in customer relationship management. We define relational information processes as encompassing the specific routines that a firm uses to manage customer information to establish long-term relationships with customers. The academic research on market information use (e.g., Menon and Varadarajan 1992; Moorman 1995), market orientation (e.g., Kohli and Jaworski 1990; Narver and Slater 1990), and organizational learning (e.g., Sinkula 1994; Slater and Narver 1995) has long emphasized the important role of organizational information processes (e.g., information acquisition, dissemination, use) in shaping how firms respond to their market environment. Our study follows this tradition. To conceptualize relational information processes, we draw on previous research and managers' feedback. Then, using data collected from a diverse sample of firms, we empirically examine the key drivers and outcome of relational information processes. We evaluate the role of CRM technology use in customer relationship management by testing its moderating influence on the association between relational informa-

tion processes and customer relationship performance (i.e., the performance of the organization on customer satisfaction and retention).

The contributions of the manuscript are the following: First, we conceptualize and measure relational information processes. Second, we demonstrate how relational information processes mediate the influence of organizational culture and management system on customer relationship performance. Third, we draw a distinction between relational information processes, which are grounded in relationship marketing theory, and the use of technology for CRM. Fourth, we measure CRM technology use and show that it interacts with relational information processes to influence customer relationship performance. The latter finding implies that CRM technology enables a more effective implementation of relational information processes. Thus, this article addresses the role of CRM technology in organizations, an issue of vital importance to managers, by building on the theoretical foundations of relationship marketing and organizational information–processing research.

In the following section, we identify relational information processes. Then, we develop hypotheses that detail how organizational culture and management systems drive the relational information processes and how relational information processes and CRM technology use influence customer relationship performance. Thereafter, we explain the research methodology. Last, we discuss the results, implications for research and practice, and limitations and future research directions.

Relational Information Processes

The Need for Relational Information Processes

Relationship marketing is based on the generation of a foundation of shared interest, in which firms and customers are commited to each other. Firms strive to use interactions with customers to generate commitment, a lasting desire in customers to maintain a valued relationship, and trust, a readiness to rely on the exchange partner. Trust is considered especially critical for relational exchanges because it is a crucial determinant of commitment. An important antecedent of trust is communication (Morgan and Hunt 1994). Communication in the CRM context involves the sharing of information between a firm and its customers (De Wulf, Odeken-Schröder, and Iacobucci 2001). To establish and maintain relationships, it is also imperative that organizations use the information to shape appropriate responses to customer needs. In effect, information plays a key role in building and maintaining customer relationships.

Relationship marketing follows different precepts from those of transactional marketing in the firm–customer interaction. Compared with transactional marketing, relationship marketing requires a much greater degree of firm–customer information sharing and differs in terms of the type of learning involved (Selnes and Sallis 2003) and in how customer information is used. Therefore, although general marketing information processes have been discussed in prior research (e.g., Menon and Varadarajan 1992; Moorman 1995), customer information processes for relationship marketing require specific attention (see also Zahay and Griffin

2004). As we previously noted, we conceptualize these as relational information processes. These information processes systematize the capture and use of customer information so that a firm's effort to build relationships is not rendered ineffective by poor communication, information loss and overload, and inappropriate information use.

Dimensions of Relational Information Processes

Our approach to understanding relational information processes involved a review of extant academic and business literature on CRM. In addition, we interviewed 15 managers (in eight companies that employ customer relationship managers and seven CRM technology vendors) and conducted a preliminary survey on a CRM-focused Web site to glean insights into relational information processes. On the basis of the literature review, interviews, and the preliminary Web-based survey, we suggest that the relational information processes construct consists of five dimensions: information reciprocity, information capture, information integration, information access, and information use. Information reciprocity ensures effective communication, information capture and integration prevent information loss, information access limits information overload, and information use routines ensure that customer information is used consistently with the needs of CRM. We describe these processes next.

Information reciprocity. Reciprocity occurs when actions taken by one exchange partner are matched by the other; it is a key defining characteristic of CRM (De Wulf, Odeken-Schröder, and Iacobucci 2001). Therefore, emphasizing processes for such interactive firm–customer information exchange is important for a firm to execute its relationship marketing strategy effectively (Day 2000). Information reciprocity refers to the processes that enable customers to interact and share information with the firm and that enable the firm to respond to customers. Information reciprocity is an integral part of relational information processes because trust and commitment, the pillars of a strong relationship, are unlikely to develop in the absence of collaborative or mutual interactive communication (Mohr, Fisher, and Nevin 1996).

Information capture. Research in market orientation (e.g., Kohli and Jaworski 1990; Narver and Slater 1990), market information use (e.g., Menon and Varadarajan 1992), and organizational learning (e.g., Sinkula 1994) has emphasized the importance of information acquisition. Building customer relationships requires detailed and up-to-date information about customer interactions with an organization. Customers often have multiple channels to communicate with a firm and could interact with numerous departments, such as sales, customer service, and marketing. The information from these interactions serves as the basis for future interactions in the context of CRM (Peppers and Rogers 1997). Thus, information capture processes that acquire information from customer interactions with various sources and channels are a critical aspect of relational information processes.

Information integration. All interactions between a firm and its customers through different departments and contact

points are sources of customer information. However, if this information exists in disparate form with the sources that interact with the customer, it can impede consistent and efficient communication. The development of trust is contingent on customers obtaining consistent and effective responses when they interact with the firm. Such responses are possible only when the history of a customer's relationship with the firm is available to support customer interactions. This requires information integration processes to ensure the assimilation of customer information from all firm–customer interactions to develop a detailed history of customer relationships and prevent loss of customer information.

Information access. The market orientation literature (e.g., Kohli and Jaworski 1990; Narver and Slater 1990) considers information dissemination a crucial component of the information processes that enhance the responsiveness of the firm. Customers may interact with various functional areas in the firm, such as sales, marketing, and customer service. Thus, providing relevant employees with access to updated and integrated customer information should be a priority for firms practicing CRM. Although the market orientation literature focuses on information dissemination, the preliminary research we conducted suggests that employees who are responsible for managing customer relationships viewed the issue more from the perspective of information access than information dissemination on a continuous basis. Mere dissemination, which implies distribution, was perceived as likely to result in information overload as a result of the vast numbers of customer interactions with an organization. Thus, we consider the term information access more accurately descriptive of the information process required to sustain customer relationships.

Information use. Market information use has been classified into action-oriented use, knowledge-enhancing use, and affective use (see Menon and Varadarajan 1992). To build and sustain customer relationships, firms should deploy the acquired customer information in a manner that is consistent with the philosophy of relationship management. Doing so would imply that firms use the information to understand the needs and behaviors of their customer (knowledge-enhancing use) and develop and offer customer-specific products and services (action-oriented use). Relationship marketing also suggests that customers should be treated in accordance with the value they offer to the firm, which in turn enhances customer lifetime value (Venkatesan and Kumar 2004). Therefore, customer information is also used to identify high-value customers.

Antecedents to Relational Information Processes

Traditionally, it was assumed that firms in the business-to-business sector and those involved in marketing services had greater motivation to build relationships with their customers. However, Coviello and colleagues (2002) find that firms compete using transactional, relational, or hybrid approaches regardless of whether they supply services or goods in the consumer or business-to-business arenas.

These results imply that researchers need to examine factors that are more specific than the broad services/goods and business-to-consumer/business-to-business classifications as antecedents to relational information processes.

Organizational learning theory provides theoretical guidance to assess the antecedents to relational information processes. The marketing literature on organizational learning (e.g., Sinkula 1994) suggests that four types of factors could be antecedents to information processes: organizational culture, organizational systems, task-related factors, and environmental factors. We address two types of antecedents to relational information processes: customer relationship orientation (organizational culture) and customer-centric management system (organizational systems). Environmental factors (i.e., competitive intensity and environmental dynamism) form the background against which the relationships are tested and used as covariates. The conceptual model appears in Figure 1.

## Customer Relationship Orientation

Previous marketing literature supports the view that organizational culture influences information processes (Menon and Varadarajan 1992; Sinkula 1994). An organization's culture is the deeply embedded values and beliefs that establish the norms for appropriate behavior (Deshpandé, Farley, and Webster 1993). Organizational culture affects a firm's choice of outcomes and the means to accomplish those outcomes (Moorman 1995). Therefore, customer relationship orientation, which is rooted in the firm's overall culture, guides the organization's attitude toward both CRM and the implementation of the necessary processes (Day 2000). Essentially, customer relationship orientation establishes a "collective mind" (Weick and Roberts 1993) or a belief system for the organization that considers customer relationship an asset and drives the choice of means (processes) to accomplish this outcome (Day 2000). Because relational information processes are the means to establishing effective relationships, customer relationship orientation motivates their implementation.

> H_1: Customer relationship orientation has a positive association with relational information processes.

Customer-Centric Management System

Information processes are likely to be influenced by an organization's management system (Menon and Varadarajan 1992). The management system represents the organizational climate, which comprises the structure and incentives that motivate behaviors consistent with a culture (Slater and Narver 1995). As such, a management system or configuration (Day 2000) that is consistent with a customer relationship orientation and reflects the design of the organization's structure and incentives is likely to influence the implementation of CRM. A customer-centric management system should consist of structural aspects that ensure that organizational actions are driven by customer needs and not by the internal concerns of functional areas. In addition, employee evaluation schemes and incentives should be designed to encourage behaviors consistent with a customer relationship–oriented culture by augmenting the organiza-

FIGURE 1
Conceptual Framework

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Conceptual Framework
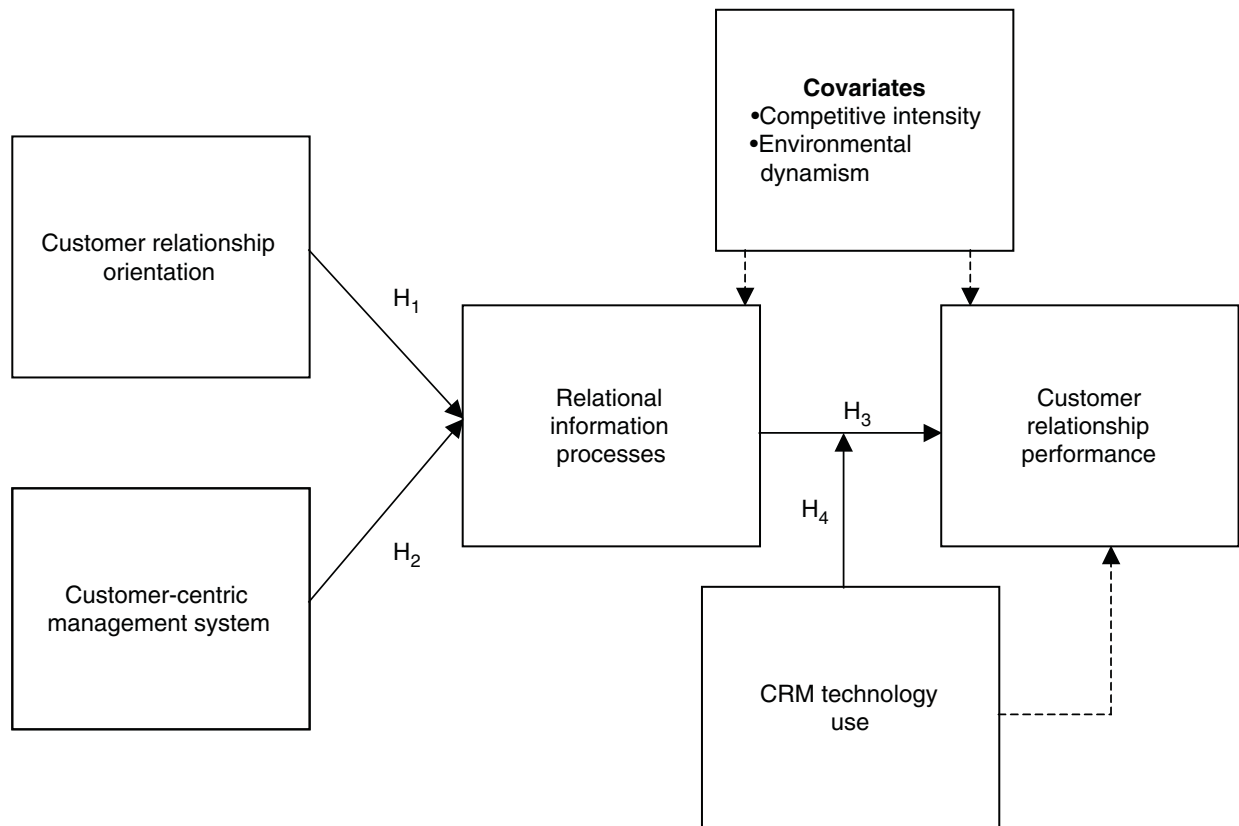
tion's ability to focus on customer interactions and by ensuring that expertise from different functional areas is deployed to promote the quality of customer experience (Day 2000). A customer-centric management system helps organizations initiate relational information processes by breaking down functional barriers to customer-centered actions and ensuring adequate focus on customer interactions.

H_2: Customer-centric management system has a positive association with relational information processes.

Performance Outcome of Relational Information Processes and CRM Technology Use

Relational Information Processes and Customer Relationship Performance

In this study, customer relationship performance focuses on two key aspects of relationships: customer retention and customer satisfaction. By providing quick and effective responses to customers, relational information processes are likely to enhance customer satisfaction by providing consumption-related fulfillment (Oliver 1996). Apart from shaping responses to customers, by enabling customers to communicate easily with the organization, relational information processes help register customers' complaints and

provide them feedback. In addition, the integration of customer information and the sharing of it with key customer contact employees enable customers to communicate with firms more effectively. Cannon and Homburg (2001) find that frequent and open communication between a supplier and a customer boosts the customer's efficiency in using the firm's products or services, thereby improving customer satisfaction and loyalty. Relational information processes may also boost customer relationship learning (Selnes and Sallis 2003) by providing customers with a greater understanding of organizations' attempts to respond to their demands and enhancing customer satisfaction and loyalty. In summary,

H_3: Relational information processes have a positive association with customer relationship performance.

CRM Technology Use and Customer Relationship Performance

Customer relationship management technology entails IT designed for CRM. In this study, we consider CRM technology use distinct from the relational information processes that drive CRM. This approach is consistent with that advocated by prior research in technology use in organizations that regard technology as a resource that supports the implementation of information processes (e.g., Brynjolfsson and Hitt 2000; Hitt and Snir 1999; Reinartz, Krafft, and Hoyer 2004). The use of CRM technology is expected to

boost the ability of an organization to sustain profitable customer relationships by enabling information to be integrated and shared smoothly, thus facilitating more efficient and effective firm–customer interaction, analysis of customer data, and customization of responses (Day 2003). Technology components of CRM include front office applications that support sales, marketing, and service; a data depository; and back office applications that help integrate and analyze the data (Greenberg 2001).[1] Sales support is designed to help the sales force acquire and retain customers, reduce administrative time, and enable the efficient management of accounts (Speier and Venkatesh 2002). Therefore, sales support permits the management of sales leads and supplies competitor and customer information to the sales force. In addition, sales support helps manage sales through multiple channels by tracking product availability and delivery. Marketing support includes market planning, campaign execution, and campaign performance measurement (Greenberg 2001). As such, marketing support comprises the generation of customized offers and communications and the assessment of product profitability. Service support coordinates the request and delivery of service and helps customers serve themselves by providing ready access to a knowledge base of solutions (Meuter et al. 2000).

These front office or customer interaction solutions are supported by a customer data depository and software that helps integrate and analyze the data. Firms develop a central data bank in which all customer-related information is stored. Creating a database that is guided by market intelligence is a critical component of a firm's attempts to create customer assets through long-term relationships (Berger et al. 2002). The database should be accessible to relevant functions, such as sales, customer service, and marketing. The data are integrated and analyzed by means of software to understand customer preferences and estimate customer lifetime value, retention, and loyalty (Greenberg 2001).

Prior research suggests that IT plays a complementary role by enhancing the effectiveness of organizational processes (Hitt and Snir 1999; Melville, Kraemer, and Gurbaxani 2004). Two factors are considered complementary if an increase in the level of one factor enhances the marginal value of the other factor (Milgrom and Roberts 1995). Although IT does not substitute for organizational processes, it increases their marginal value by enabling effective implementation (Hitt and Snir 1999). Therefore, firms adopt IT solutions to complement organizational processes by enhancing their marginal value (Brynjolfsson and Hitt 2000).

Relational information processes are implemented so that the information required to establish trust and commitment between a firm and its customers is developed, provided to decision makers, and used effectively. Relational information processes concretize the implementation of customer relationship orientation by laying out the way that a firm should use customer information to develop strong

and enduring relationships with valuable customers. In the absence of a clear delineation of these processes, the implementation of CRM technology might not be consistent with employees' expectations of customer information management. The mismatch between the customer information management practices in the organization and the information-handling and -processing capability of the CRM technology system could prevent the organization from taking advantage of the capabilities of the CRM technology system. Using IT solutions without designing appropriate processes may create "significant productivity losses as any benefits of computerization are more than outweighed by negative interactions with existing organizational practices" (Brynjolfsson and Hitt 2000, p. 25). If relational information processes are delineated, CRM technology ensures that their implementation is rendered efficient by enabling a smoother reciprocal flow of information and by limiting information loss and overload by capturing, integrating, and providing information access to decision makers. Reinartz, Krafft, and Hoyer (2004) note that CRM technology is a facilitator of CRM activities. By playing a complementary role, CRM technology enhances the marginal value of relational information processes, thereby improving customer relationship performance.

H_4: CRM technology use has a positive moderating influence on the association between relational information processes and customer relationship performance.

Covariates: Competitive Intensity and Environmental Dynamism

Institutional theory (DiMaggio and Powell 1983) suggests that environmental variables (e.g., competitive intensity; the extent of interfirm rivalry; environmental dynamism, the variability of customer needs, and technology) influence organizational actions. Competitive intensity might compel firms to institute relational information processes by emphasizing the need to retain customers and thus hurt customer relationship performance by reducing customer retention. Environmental dynamism might motivate firms to institute relational information processes because relationship learning might be more critical in rapidly changing environments. Customer relationship performance might be lower in dynamic environments because the rapid changes in customer needs and technology opportunity might hurt customer retention. In this study, we use competitive intensity and environmental dynamism as covariates.

Methodology

Sample Characteristics and Data Collection

Firms pursue customer relationship programs in both services and goods firms and in business-to-business and business-to-consumer markets (Coviello et al. 2002). Therefore, in the interest of generalizability of the results, we decided not to constrain our sample to specific industries. On the basis of the interviews and pretesting, we identified a competent key informant as a marketing, sales, or customer service executive, typically at the level of vice president or general manager in a strategic business unit (SBU).

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[1]Although there are different conceptualizations of CRM technology components, on the basis of the interviews we conducted with CRM users, we decided to adapt Greenberg's (2001, pp. 40–42) conceptualization.

Furthermore, because we found in our preliminary research that implementation of CRM and relational information processes is feasible without CRM technology (see also Rigby, Reichheld, and Schefter 2002), it was not essential that our sample include only firms that had implemented CRM technology. Using two commercial lists, we developed a contact list of senior marketing, sales, and customer service managers in 1105 SBUs of top firms in the United States (in terms of sales revenue).

The first list was vetted using telephone calls; it provided key informant names and/or e-mail addresses in 542 organizations. We mailed these informants the print questionnaire two times, and when the e-mail address was available, we sent e-mails requesting participation. Informants were also given an option to fill out the questionnaire on a Web site. The format of the online questionnaire was similar to that of the print questionnaire. We had e-mail addresses for all 563 contacts on the second list, and we e-mailed them a maximum of three times, requesting them to respond using the questionnaire on the Web site.

A total of 172 key informants responded to the mail and Web survey, for a response rate of 15.56%. We used data for 21 respondents only for measurement analysis because of missing information on several questions. The questionnaire was complex and long, and senior managers were targeted as key informants. Given these considerations, the response rate is consistent with that reported in previous organizational research (e.g., Homburg and Pflesser 2000). Of the 172 respondents, 48 answered the mail questionnaire, and the remaining 124 responded on the Web. The two commercial lists that provided the mailing sample generated 45.5% and 55.5% of the respondents, respectively. We compared respondents from the two lists and those who responded online and by mail on key variables, such as implementation of CRM system, annual revenue, and how long the key informant had been with the firm. On the basis of chi-square and F tests, mail and Web-based respondents and respondents from both lists did not significantly differ on any of these factors. Therefore, we pooled the data for further analysis.

Of the firms that provided data, 28% had implemented CRM technology, and another 28.2% were planning to do so. On average, the key informant had been with the company for approximately eight years. The median annual revenue for the firms that responded was $140 million. Business-to-business SBUs constituted 69.5% of the respondents, and the other 30.5% were predominantly business-to-consumer SBUs (approximately 50% of which also had some business-to-business transactions). Of the respondents, 49.7% were goods firms, and 50.3% were service firms. A comparison of early and late responders to the survey indicated no significant differences in the characteristics of these SBUs on the means of constructs such as CRM technology use and relational information processes, leading us to conclude that the likelihood of nonresponse bias is minimal.

Measure Development

We developed measurement scales for customer relationship orientation, customer-centric management system, and five dimensions of relational information processes by following procedures observed in the marketing literature (see Churchill 1979). On the basis of a review of the literature on relationship marketing and information use, managerial interviews, and the preliminary survey, we developed a list of indicators to measure the constructs. We pretested these measures over two stages with samples of academics and managers. Three academics checked the scale indicators for face validity and provided comments that we used to revise the scales. Using e-mail, we collected data from 46 managers engaged in CRM activities. We conducted exploratory factor analysis, revised the scales, and developed the questionnaire. The scales consisted of seven-point Likert-type indicators. We describe the measures next (see Table 1).

We measured customer relationship orientation using a scale that reflects the cultural propensity of the organization to undertake CRM (Day 2000). In developing this scale, we focused on shared values of an organization that are consistent with CRM (e.g., considering customer relationships a valuable asset and emphasizing customer retention) and senior management support for CRM. Customer-centric management system refers to the structure and incentives that provide an organization with the ability to build and sustain customer relationships (Day 2000). Therefore, this measure assessed the organization and coordination of the firm around customers and their needs and specific incentives that enable the firm to focus on CRM.

The information reciprocity scale used indicators that focused on reciprocal communication between the firm and the customer. The information capture measure emphasized the acquisition of customer information on an ongoing basis from various sources. The information integration scale reflected the efforts of the organization to bring together the information collected from various sources and functions on a customer basis. The information access measure focused on the degree to which relevant employees could gain access to integrated customer data in a timely manner. The information use scale assessed the extent to which the firm used customer information to undertake actions that are consistent with CRM.

The customer relationship performance scale assessed customer satisfaction and customer retention. Firms use relational information processes to gain a competitive advantage over their rivals. The performance of an organizational action designed to obtain competitive advantage is more meaningful when it is assessed in relation to competition (Matsuno, Mentzer, and Ozsomer 2002). Therefore, we measured customer relationship performance relative to competition; we derived the measure from Rust, Moorman, and Dickson's (2002) measure. We measured environmental dynamism and competitive intensity by adapting scales from the work of Jaworski and Kohli (1993).

We developed an index for the CRM technology use measure that was similar to the measure of innovation in Han, Kim, and Srivastava's (1998) work and was based on Greenberg's (2001) conceptualization. The CRM technology use measure has six aspects: sales support, marketing support, customer service support, data analysis support, data integration and access support, and customer database. In the questionnaire, we asked the respondents to mark

TABLE 1
Construct Measures and Loadings

	Loadings
Customer Relationship Orientation	
•In our organization, retaining customers is considered to be a top priority.	.837
•Our employees are encouraged to focus on customer relationships.	.915
•In our organization, customer relationships are considered to be a valuable asset.	.912
•Our senior management emphasizes the importance of customer relationships.	.914
Customer-Centric Management System	
•We focus on customer needs while designing business processes.	.820
•In our organization, employees receive incentives based on customer satisfaction measures.	.578
•A key criterion used to evaluate our customer contact employees is the quality of their customer relationships.	.695
•In our organization, business processes are designed to enhance the quality of customer interactions.	.859
•We organize our company around customer-based groups rather than product or function-based groups.	.503
•In our organization, various functional areas coordinate their activities to enhance the quality of customer experience.	.801
Relational Information Processes	
Information Reciprocity	
•We enable our customers to have interactive communications with us.	.695
•We provide our customers with multiple ways to contact the organization.	.990
•We focus on communicating periodically with our customers.	.887
•We maintain regular contact with our customers.	.803
Information Capture	
•We collect customer information on an ongoing basis.	.921
•We capture customer information from internal sources within the organization.	.768
•We collect customer information using external sources (such as market research agencies, syndicated data sources, and consultants).	.502
•The information collected from customers is updated in a timely fashion.	.717
•We use customer interactions to collect information.	.635
Information Integration	
•We integrate customer information from the various functions that interact with customers (such as marketing, sales, and customer service).	.820
•We integrate internal customer information with customer information from external sources.	.711
•We integrate customer information from different communication channels (such as telephone, mail, e-mail, the Internet, fax, and personal contact).	.851
•We merge information collected from various sources for each customer.	.864
Information Access	
•In our organization, relevant employees find it easy to access required customer information.	.884
•In our organization, relevant employees can access required customer information even when other departments/functional areas have collected it.	.874
•In our organization, relevant employees always have access to up-to-date customer information.	.876
•In our organization, relevant employees are provided the information required to manage customer relationships.	.829
Information Use	
•We use customer information to develop customer profiles.	.693
•We use customer information to segment markets.	.710
•We use customer information to assess customer retention behavior.	.666
•We use customer information to identify appropriate channels to reach customers.	.776
•We use customer information to customize our offers.	.739
•We use customer information to identify our best customers.	.797
•We use customer information to assess the lifetime value of our customers.	.620
Customer Relationship Performance	
In the most recent year, relative to your competitors, how has your business unit performed with respect to	
•Achieving customer satisfaction?	1.000
•Keeping current customers?	.590

TABLE 1
Continued

	Loadings

Environmental Dynamism
- In our business, customers' product preferences change substantially over time. — .528
- We are witnessing demand for our products and services from customers who never bought them before. — .520
- The technology in our industry is changing rapidly. — .851
- Technological changes provide big opportunities in our industry. — .910
- A large number of new product ideas have been made possible through technological breakthroughs in our industry. — .831

Competitive Intensity
- Competition in our business is cut throat. — .902
- We are in a business with very aggressive competitors. — .970
- Price competition in this business is severe. — .825

CRM Technology Use Measure

Which of the following functions is your current CRM system capable of doing? Please check all that apply.

Sales Support
- ☐ Provides sales force in the field with customer information.
- ☐ Provides sales force in the field with competitor information.
- ☐ Assigns leads and prospects to appropriate sales personnel.
- ☐ Provides customized offers to sales people on field.
- ☐ Provides sales force with leads for cross sell/up sell opportunities.
- ☐ Tracks product availability.
- ☐ Enables inventory management.
- ☐ Controls sales through multiple sales channels.

Marketing Support
- ☐ Supports marketing planning and budgeting.
- ☐ Analyzes responses to marketing campaigns.
- ☐ Automates routine activities such as providing promotional literature.
- ☐ Enables management of marketing promotions.
- ☐ Generates customized offers.
- ☐ Customizes our communication to customers.

Service Support
- ☐ Allows customer support personnel to access data on customer interactions with all functional areas.
- ☐ Provides customers access to a knowledge base of solutions to commonly occurring problems (e.g., frequently asked questions).
- ☐ Schedules and tracks service delivery.
- ☐ Is able to customize service scripts to the particular customer's needs.

Analysis Support
- ☐ Enables assessment of channel performance.
- ☐ Enables forecast of customer preferences.
- ☐ Measures customer loyalty.
- ☐ Calculates customer life time value.
- ☐ Calculates customer retention rates.
- ☐ Enables assessment of product profitability.

Data Integration and Access Support
- ☐ Combines customer transaction data with external source data.
- ☐ Integrates customer information from different contact points (e.g., mail, telephone, Web, fax).
- ☐ Allows relevant employees access to unified consumer data.

Database

Which of the following types of data are being collected by your CRM solution? Please check all that apply.
- ☐ Online customer data
- ☐ Offline customer data
- ☐ Customer psychographics (e.g., personality traits)
- ☐ Customer lifestyle data (e.g., car & home ownership)
- ☐ Internal sales data (catalog/in-store sales, etc.)
- ☐ Customer interaction data
- ☐ External data sources (e.g., census data, competitor information)
- ☐ Customer demographics

TABLE 1
Continued

	Loadings
☐ Internal financial records (invoices, receivables, etc.)	
☐ Supplier data (inventory, purchase records, etc.)	
☐ Customer contact information (record of customer's contact with multiple touch points)	
☐ Employee data (personnel records)	
☐ Ad response data (customers arriving from specific ads or other referrals)	
☐ Call center sales	
☐ Customer service data (complaints, returns, etc.)	

from a list of CRM technology applications the items that their organization was using. We aggregated the marked items to measure CRM technology use.

Results

Measurement Model Results

We ran a confirmatory factor analysis (CFA) to assess the measurement properties of the reflective latent constructs.[2] Because there were a large number of indicators for the

[2]Because the technology use measure is an index, it is not subjected to tests of reliability and CFA.

latent constructs (46), we ran a CFA on each construct.[3] Table 2 presents the CFA results. The chi-square statistics were significant. However, because of its sensitivity to sample size, we used other recommended goodness-of-fit statis-

[3]We ran a ten-factor correlated model (with all the 44 indicators) and a ten-factor model with relational information processes as a second-order factor (again, with all the 44 indictors). The goodness-of-fit indexes for both of these models were acceptable, and indicator loadings were similar to those we obtained from a separate CFA of each construct. However, given the size of the sample compared with the number of indicators, we chose the analysis we report in the article. That is, we report the CFA of each construct.

TABLE 2
Measurement Model Results for Reflective Measures

Construct	Number of Indicators	Construct Reliability	Chi-Square (d.f.)	GFI (AGFI)	Bentler's Normed Fit Index	Bollen's Normed Index	Rescaled Normed Index	Tucker–Lewis Index
Customer relationship orientation	4	.941	2.580 (2)	.992 (.959)	.997	.999	1.000	.993
Customer-centric management system	6	.863	35.906 (9)	.929 (.834)	.919	.938	.937	.895
Information reciprocity	4	.912	.927 (1)	.997 (.973)	.997	.979	1.000	1.000
Information capture	5	.840	14.023 (5)	.968 (.904)	.960	.974	.973	.973
Information integration	4	.886	6.178 (2)	.982 (.908)	.983	.948	.988	.964
Information access	4	.923	8.215 (2)	.975 (.872)	.983	.983	.981	.940
Information use	7	.803	49.869 (14)	.919 (.837)	.906	.931	.930	.895
Customer relationship performance[a]	2	.795	—	—	—	—	—	—
Competitive intensity[a]	3	.928	—	—	—	—	—	—
Environmental dynamism	5	.889	13.653 (5)	.962 (.885)	.964	.977	.977	.953

[a]We do not report goodness-of-fit indexes for constructs with three or fewer indicators, because they have a perfect fit.

tics to evaluate the fit of various models and suggest acceptable fit for all the constructs. The construct reliabilities ranged from .80 to .94 and were well above the recommended values. As we show in Table 1, the loadings range from .50 to greater than .90 (with most exceeding .70), suggesting that the indicators of the construct are acceptable.

We conceptualized relational information processes as a second-order construct with five subfactors, or dimensions. We examined the second-order factor structure by conducting a one-factor CFA on the summed scores of the respective five first-order constructs. The model fit was good, lending support to the second-order factor conceptualization for relational information processes (χ^2 = 17.12, degrees of freedom [d.f.] = 5; goodness-of-fit index [GFI] = .96, adjusted goodness-of-fit index [AGFI] = .88, Bentler and Bonett's normed index = .96, Bollen's normed index = .91, and Tucker–Lewis index = .97).

We assessed discriminant validity using the procedures that Bagozzi (1980) and Fornell and Larcker (1981) suggest. We formed scores for each of the reflective measures

by summing the respective indicators, and we fit a six-factor correlated model. We fixed the loadings of the single indicator factor models at the square root of the factor's reliability. We used the summed scores of each of the five information factors as indicators of the relational information processes construct. These results appear in Table 3. The goodness-of-fit indexes suggest an acceptable fit for the correlated model. For Bagozzi's procedure, we fixed correlations between each pair of constructs at one, and we used the differences in chi-square degrees of freedom to determine whether these correlations were different from one. The chi-square difference tests for all pairs of constructs except one were significant at $p < .05$ (the customer relationship orientation–customer-centric management system pair was significant at $p < .08$). To implement Fornell and Larcker's procedure, we computed the shared variance between the indicators of a construct and the construct. We also computed the shared variance between two constructs. As evident from Table 4, the shared variances of all constructs and their indicators are greater than the shared variances between all pairs of constructs. Overall, the results offer support for discriminant validity among the constructs.

Common Method Bias

Common method variance could bias the findings when both independent and dependent measures are obtained from the same source, as is the case in this study. We assessed method bias using the procedure that Lindell and Whitney (2001) recommend.[4] According to their procedure,

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TABLE 3
Discriminant Validity Results: Loadings and Construct Reliabilities

Constructs	Loadings
Relational Information Processes	(.875)[a]
•Information reciprocity	.700
•Information capture	.777
•Information integration	.835
•Information access	.699
•Information usage	.803
Customer Relationship Orientation	.970[b]
Customer-Centric Management System	.929[b]
Environmental Dynamism	.943[b]
Competitive Intensity	.963[b]
Customer Relationship Performance	.892[b]

[a]The value is construct reliability.
[b]Loadings are fixed to square roots of respective reliabilities.
Notes: Goodness-of-fit indexes: χ^2 = 61.344, d.f. = 25 (p = .000); GFI = .928, AGFI = .841, Bentler and Bonett's normed fit index = .912, Bollen's normed index = .841, rescaled normed index = .944, and Tucker–Lewis index = .900.

[4]As a reviewer recommended, we also used Harmon's one-factor test (in accordance with Podsakoff and Organ's [1986] article) to assess common method bias. Ten factors had eigenvalues greater than one, and together they accounted for 74% of the total variance; the first factor accounted for 34% of the total variance. A limitation of Harmon's one-factor test is that there are no guidelines on how high the variance of the first factor should be for common method bias to be detected. In addition, the first factor would contain variance that is due to methods bias and to the traits, and it is not possible to isolate the variance attributable to the method in this test. Velicer (1976) shows that the minimum value of the mean absolute squared value of the partial correlations (after the effect of the common factors is removed) suggests the

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TABLE 4
Correlations Among Constructs and Discriminant Validity

| Constructs | Mean | Standard Deviation | Constructs | | | | | |
			RIP	CRO	CCM	ED	CI	CP
RIP	112.17	25.69	**.585**	.434	.441	.077	.101	.294
CRO	28.23	6.32	.612	**.941**	.607	.064	.136	.423
CCM	25.19	7.41	.596	.706	**.863**	.076	.117	.349
ED	22.74	7.98	.249	.246	.253	**.889**	.050	.063
CI	16.51	6.86	.301	.352	.315	.214	**.928**	.008
CP	10.80	4.29	.461	.564	.492	.216	.081	**.796**
CTU	4.77	7.98	.126	.084	.110	.058	.032	.052

Notes: Diagonal entries are shared variances between the indicators and their respective constructs, entries below the diagonal are correlations, and entries above the diagonal are shared variance among the respective constructs obtained from CFA. RIP = relational information processes, CRO = customer relationship orientation, CCM = customer-centric management system, ED = environmental dynamism, CI = competitive intensity, CP = customer relationship performance, and CTU = CRM technology use.

a marker variable or a scale that is theoretically unrelated to other scales should be included in the questionnaire so that there is a priori rationale for this scale to have zero correlation with other scales. If this is not done (as is the case in our study), the best alternative is to identify a scale that has a small correlation with the dependent construct. The correlation of this scale with the endogenous construct scale is considered indicative of method variance. Therefore, after this scale is identified, its correlation with the endogenous construct is used to partial out its effect from other correlations to assess the extent of method variance. In addition, Lindell and Whitney suggest a sensitivity analysis in which 95% and 99% confidence intervals are constructed for the correlations of the marker scale, and the procedure is repeated.

As the marker scale, we used competitive intensity, which had a nonsignificant correlation of .081 with customer relationship performance. Table 5 gives the results of the procedure and shows that the partial correlations between the dependent and the independent variables are high and significant, suggesting that these correlations are not merely due to common method bias. Note also that method variance is unlikely to influence correlations involving the CRM technology use measure because respondents simply indicate the current functions of their CRM technology system. Furthermore, the interaction of CRM technology use and relational information processes should have minimal method bias.

Hypotheses Testing

We estimated the following equations using least squares regression to test hypotheses H_1–H_4.

(1) $\quad RIP = \beta_0 + \beta_1 CRO + \beta_2 CCM + \beta_3 CI + \beta_4 ED + \varepsilon_1;$

(2) $\quad CP = \beta_{01} + \beta_{11} RIP + \beta_{21} CTU + \beta_{41} CI + \beta_{51} ED + \varepsilon_{11};$ and

(3) $\quad CP = \beta_{01} + \beta_{11} RIP + \beta_{21} CTU + \beta_{31} RIP \times CTU + \beta_{41} CI$

$\qquad + \beta_{51} ED + \varepsilon_{11},$

where

$\qquad RIP$ = relational information processes,
$\qquad CRO$ = customer relationship orientation,
$\qquad CCM$ = customer-centric management system,
$\qquad CI$ = competitive intensity,
$\qquad ED$ = environmental dynamism,
$\qquad CP$ = customer relationship performance, and
$\qquad CTU$ = CRM technology use.

We used a stepwise regression approach to test the interaction hypothesis in Equation 3. We created the interaction

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number of factors to retain. Therefore, we used the mean absolute squared error of the partial correlations to assess which factor structure is better, and its value was the lowest for ten factors (.0187). We also computed the root mean square of the off-diagonals using an exploratory factor analysis. For the one-factor model, the root mean square of the off-diagonals is .1142, whereas for the ten-factor model, it is .0264. In other words, the variance remaining after the removal of the variance attributable to common method bias is substantial and is explained better using a ten-factor solution.

TABLE 5
Common Method Bias Analysis

Con-structs	Constructs					
	RIP	CRO	CCM	ED	CI	CP
RIP	—					
CRO	.612*					
	.578*					
	.534*	—				
	.504*					
CCM	.596*	.706*				
	.560*	.680*				
	.514*	.647*	—			
	.484*	.624*				
ED	.249*	.246*	.253*			
	.183*	.180*	.187*			
	.097	.094	.102*	—		
	.040	.037	.046*			
CI	.301*	.352*	.315*	.214*		
	.239*	.296*	.255*	.145*		
	.160*	.221*	.177*	.055	—	
	.107	.172*	.125*	−.004		
CP	.461*	.564*	.492*	.216*	.081[a]	
	.414*	.526*	.447*	.147*		
	.352*	.476*	.389*	.058		
	.312*	.443*	.351*	−.002		

*$p < .05$ (one-tailed test).
[a]This is a marker correlation.
Notes: The first value in the cell is the correlation, the second value is the correlation corrected for method bias, the third value is 95% sensitivity analysis, and the fourth value is 99% sensitivity analysis. RIP = relational information processes, CRO = customer relationship orientation, CCM = customer-centric management system, ED = environmental dynamism, CI = competitive intensity, and CP = customer relationship performance.

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term after mean centering the data. When we included the interaction term in Equation 2 to form Equation 3, the adjusted R^2 for the estimation increased from .21 to .24, and the partial F statistic ($6.14_{1, 146}$) was significant at $p < .05$. Tests of multicollinearity provided no evidence of the same, because none of the variance inflation factors exceeded 10. The results from the estimation appear in Table 6.

In H_1 and H_2, we hypothesized positive associations for customer relationship orientation and customer-centric management system, respectively, with relational information processes; these were supported (.36, t-value = 3.97; .31, t-value = 3.47). In addition, we found support for H_3 (.46, t-value = 5.85), confirming that relational information processes are positively associated with customer relationship performance. We found support for the mediating role of relational information processes on the association between the antecedents (i.e., customer relationship orientation and customer-centric management system) and customer relationship performance using the Sobel (1982) test, which is in line with the procedures that Baron and Kenny (1986) recommend. The Sobel test showed that relational information processes mediate the relationship between customer relationship orientation and customer relationship performance (t-value = 2.21, $p < .03$) and between customer-centric management system and customer rela-

Predictor Variables	Hypothesis	Equation 1 Dependent Variable: RIP Standardized Coefficient (t-Value)	Equation 2 Dependent Variable: CP Standardized Coefficient (t-Value)	Equation 3 Dependent Variable: CP Standardized Coefficient (t-Value)
CRO	H_1	.36* (3.97)	—	—
CCM	H_2	.31* (3.47)	—	—
RIP	H_3	—	.46* (5.85)	.48* (6.18)
CTU		—	−.01 (.134)	−.04 (.60)
RIP × CTU	H_4	—	—	.19* (2.52)
CI	—	.07 (1.08)	−.08 (1.06)	−.11 (1.43)
ED	—	.07 (.96)	.12 (1.59)	.10 (1.31)
Adjusted R^2		.42	.21	.24
F statistic$_{(d.f.)}$		$28.48_{(4, 146)}$*	$10.92_{(4, 146)}$*	$10.32_{(5, 145)}$*

*$p < .05$.
Notes: RIP = relational information processes, CRO = customer relationship orientation, CCM = customer-centric management system, ED = environmental dynamism, CI = competitive intensity, CP = customer relationship performance, and CTU = CRM technology use.

tionship performance (t-value = 2.96, $p < .003$).[5] Although not hypothesized, we examined and found no significant difference between business-to-business and business-to-consumer firms in their usage of relational information processes ($p = .18$). In addition, we did not observe any significant difference between goods and services firms in the extent of their use of relational information processes ($p = .25$).

In H_4, we predicted that CRM technology use enhances the influence of relational information processes on customer relationship performance; we found support for this (.19, t-value = 2.52). We conducted simple slope analysis (Aiken and West 1991) to clarify the nature of this interaction. As we show in Figure 2, relational information processes enhance customer relationship performance when CRM technology use is both low and high. However, as relational information processes go from low to high, customer relationship performance improves more rapidly for a high level of CRM technology use than for a low level of CRM technology use. The slope of the association between

[5]We also informally examined the mediation effect using the regression tests that Baron and Kenny (1986) recommend. These tests involve regressing (1) the antecedents on the mediating variable, (2) the mediating variable on the outcome variable, (3) the antecedents on the outcome variable, and (4) the antecedents and mediating variable on the outcome variable. For mediation to be established, the antecedents should be related to the mediating variable, the mediating variable should be related to the outcome variable, and the effect of the antecedents on the outcome variable should be diminished by the mediating variable. In our analysis, all the conditions were met, and the tests found that the influence of customer-centric management system on customer relationship performance was completely mediated through relational information processes, and the influence of customer relationship orientation was partially mediated. In the presence of relational information processes, the influence of customer-centric management system on customer relationship performance was rendered insignificant, and that of customer relationship orientation was diminished ($\beta = .39$ versus .46 without relational information processes as the mediating variable). We used all the variables, including the covariates in the regression analysis.

relational information processes and customer relationship performance was .03 (t-value = 2.94) when CRM technology use was low. The slope for the same association was .06 (t-value = 6.03) when CRM technology use was high. Customer relationship performance at low values of relational information processes was inferior when CRM technology use was higher than when it was lower (see Figure 2; M = 9.40 versus M = 10.41).[6]

We also examined whether the use of CRM technology provided differential customer relationship performance advantage for business-to-consumer and business-to-business SBUs and found no significant difference ($p = .86$). In addition, we found no significant difference in the influence of CRM technology use on the customer relationship performance of goods and services firms ($p = .14$). Thus, our results suggest that business-to-business and services SBUs do not enjoy any advantage over their business-to-consumer and goods counterparts, respectively, in terms of the influence of CRM technology use on customer relationship performance. Finally, the covariates (i.e., environmental dynamism and competitive intensity) did not have any significant effects on relational information processes and customer relationship performance.

Discussion

Although extant marketing literature has emphasized the importance of information processes (e.g., Menon and Varadarajan 1992; Moorman 1995), information processes relevant to CRM have not received adequate attention.

[6]Because only a part of our sample used CRM technology, as a reviewer suggested, we tested whether this result was driven by outlying values of CRM technology use. Using a stem-and-leaf plot, we identified seven outlying observations of CRM technology use. We estimated the model after removing these observations from the sample and obtained results consistent with those of the full sample. We also reestimated the equation after removing one multivariate influential observation with a standardized residual greater than 3. The results in this case were also consistent with Table 6.

FIGURE 2
Slope Analysis: The Moderating Effect of CRM Technology Use on the Association Between Relational Information Process and Customer Relationship Performance
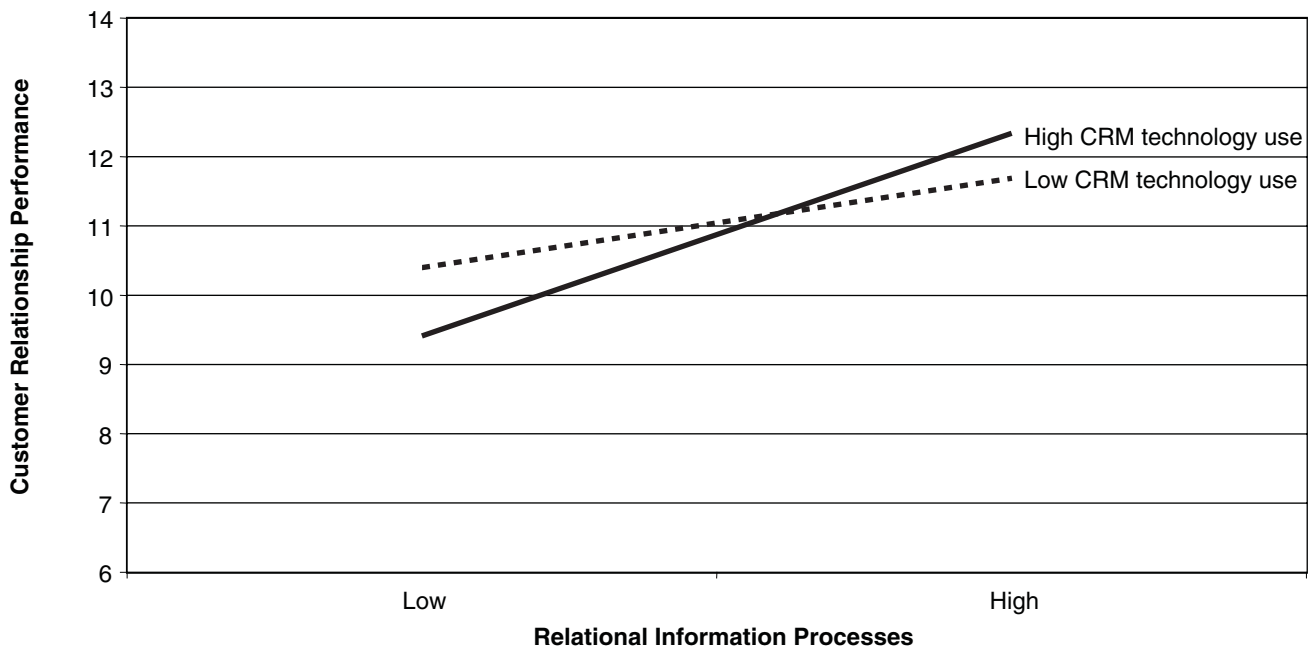
Notes: We mean centered all measures for the interaction analysis.

Thus, an important contribution of this article is the conceptualization and measurement of relational information processes and the demonstration of its antecedents. We also developed a measure for CRM technology use and showed that CRM technology use moderates the influence of relational information processes on customer relationship performance. Overall, our findings support the contention that relational information processes provide guidelines to help firms manage customer information and interact with customers in ways that are consistent with the demands of CRM. These processes are necessary to enhance customer relationship performance while CRM technology performs a supportive role. Reinartz, Krafft, and Hoyer (2004) speculate that CRM technology use may even have a negative effect on performance, and our study implies that this could occur when appropriate relational information processes are not implemented.

To clarify our results further for relational information processes and CRM technology use, we conducted e-mail or telephone follow-up interviews with respondents in 19 of the 48 firms in the sample that had implemented CRM technology. Several respondents that mentioned that their firm was successful with its use of CRM technology indicated that the user groups played important roles in planning for the implementation of CRM technology, thus ensuring that their information needs and processes received dominant consideration. The respondents in firms that expressed frustration with CRM technology use had their implementation effort driven by technology and not by user needs. In addition, in some firms, even if the planning was done collabo-

ratively, the user groups found it difficult to adapt to a new way of working. In many cases, the respondents cited that the learning curve was steep and that they needed to retrace their steps and redesign processes and software to ensure that the relationship marketing effort became more effective. Some organizations tried unsuccessfully to implement many aspects of the technology on the basis of the tools that were available. Subsequently, they scaled back the technology implementation, prioritized a few specific applications, and had better success.

In the interviews, respondents also stated that implementing CRM technology enabled them to communicate much better with their customers and to help customers manage their own needs (information reciprocity), helped capture data more effectively when there were large numbers of customers (information capture), enabled customer service employees to access consolidated customer information (information integration and access), and enhanced senior management's decision-making ability by providing a "dashboard" of customer information and by identifying critical problem areas (information integration, access, and use). Some of these firms were sophisticated users of CRM technology; this was apparent in the comments from one respondent: "It will track all of the interactions—you call to complain, you called the help desk, you don't like this, you don't like that…. It allows me to do analysis on what is [the] average length a prospect is in our system before they're revenue producing, how much revenue by customer, it does all these cool pie charts and graphs…. It's knowledge capital." However, several of the respondents revealed

that their firm was using CRM technology in a limited way, focusing largely on information capture and access.[7]

Managerial Implications

Importance of relational information processes. This study identifies the key relational information processes that should be implemented by firms that opt to pursue CRM. Delineation of relational information processes enables managers to track and evaluate the information routines that are relevant for CRM. Furthermore, this article explores key antecedents of relational information processes, helping firms assess whether their customer relationship orientation and customer-centric management system, both of which managers can control, are consistent with the demands of relationship management. Designing effective relational information processes and enhancing them using CRM technology could help a firm develop customer-relating capability (see Day 2000).

Implementation of CRM technology. Firms should deploy CRM technology to enhance the effectiveness of relational information processes. Although CRM technology use by itself is not a panacea to CRM problems (see also Rigby, Reichheld, and Schefter 2002), in the presence of properly designed relational information processes, the technology promotes customer relationship performance. Customer relationship management technology is a complex suite of applications. Implementing this technology successfully to improve customer relationship performance requires a thorough understanding of relational information processes within the organization. Therefore, the key decision that managers who are deliberating the use of CRM face is not whether to implement CRM technology but whether their organization could benefit from relational information processes. In addition, the interview data suggest that organizations benefit from adopting a multistage approach to CRM technology implementation to enable employee learning.

Research Implications

We delineate the information processes that help organizations develop sustained bonds with their customers. In doing so, this study extends and links the relationship marketing and market information–processing literature streams. In addition, we draw a distinction between CRM, a process long advocated by marketing academics, and CRM technology, its narrower connotation, which has been widely deployed in organizations. The illumination of the distinctive roles of relational information processes and CRM technology in the pursuit of CRM strategy helps advance the relationship marketing research stream.

Limitations and Future Research Directions

This study is based on self-reported data and could be constrained by common method bias, though Lindell and Whitney's (2001) procedure shows that this influence is likely to be minimal. Obtaining objective performance data could have further ameliorated this potential problem. However, because our focus is on whether relational information processes and CRM technology use provide a differential advantage, we require relative performance data for the customer relationship performance construct rather than absolute performance data. However, relative customer relationship performance data are not easily available from public sources.[8]

Our findings should be evaluated against the background that several of the CRM technology users among the respondents were in the early stages of adoption and, thus, possibly still learning to use the complex technology. Despite this, we found support for the ability of CRM technology to enhance customer relationship performance in conjunction with relational information processes. However, to confirm our findings further, additional research with firms at later stages of CRM technology adoption would be beneficial, as would be research with a larger sample of firms that have deployed CRM technology. Notably, Day and Van den Bulte (2002) find that CRM deployment is unlikely to contribute to customer-relating capability after a minimum competency level is reached. We tested this and found no support for the diminishing positive influence of CRM technology use on customer relationship performance. As we noted, however, it is possible that firms using CRM technology in our sample were still in the learning stage and, therefore, had not reached the minimum competency level. Our study provides only a snapshot of ongoing processes; a longitudinal study to assess the role of experience with CRM technology use would help clarify this issue.

Reinartz, Krafft, and Hoyer (2004) do not find support for the moderating influence of CRM technology use on the relationship between the CRM process and financial performance, though we found that CRM technology moderates the association between relational information processes and customer relationship performance. The difference in the results from these studies could be attributed to the effect of CRM technology use possibly materializing more easily and earlier on intermediate process measures, such as customer relationship performance, than on financial performance. As such, and as Reinartz, Krafft, and Hoyer note, the result might change over time after firms become more competent in their use of CRM technology. In addition, unlike financial performance measures, customer relationship performance does not consider the cost implications of

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[7]As a reviewer recommended, we empirically examined the moderating influence of CRM technology use on the association between individual dimensions of relational information processes and customer relationship performance. We ran five separate regressions for this purpose and observed that CRM technology use enhanced the influence of information reciprocity (t-value = 3.71), information access (t-value = 2.32), and information use (t-value = 2.77), but it did not enhance the influence of information capture (t-value = 1.187) and information integration (t-value = 1.549) on customer relationship performance. All five dimensions of relational information processes had significant main effects on customer relationship performance ($p < .05$). The differential influence of CRM technology use could be a reflection of the relative skill of firms to leverage CRM technology to enhance the influence of various dimensions of relational information processes on customer relationship performance.

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[8]We thank a reviewer for this suggestion.

implementing CRM technology. Thus, the return on investment of CRM technology use deserves further research attention, with an assessment of the costs of implementing the technology using more comprehensive measures of financial performance.

Because of data limitations, we could not evaluate the differential influence of aspects of CRM technology use, such as sales support, marketing support, and service support, on customer relationship performance. Thus, further research is required to examine this. Other opportunities for research are provided by our conceptualization and measurement of relational information processes. For example, assessment of the role of relational information processes on relationship learning (Selnes and Sallis 2003) and customer-relating capability (Day 2000) could potentially enrich the relationship marketing literature.

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