

## A process-oriented perspective on customer relationship management and organizational performance: An empirical investigation

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### ABSTRACT

Research on the CRM-performance link has been fragmented due to various perspectives on CRM. This study, considering different concepts of CRM, proposes a process-oriented framework for examining the relationship among CRM resources, CRM process capabilities, and organizational performance. Based on the resource-based view (RBV) of the firm, CRM resources are classified as “technological CRM resources” and “infrastructural CRM resources”. Data from 77 Iranian Internet service provider firms were gathered in a field survey. The empirical work indicates that the measured constructs demonstrate key psychometric properties including reliability and validity. The results reveal that CRM processes are more affected by infrastructural CRM resources rather than technological CRM resources. Moreover, the findings indicate that firms with improved CRM process capabilities enjoy better organizational performance.

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### 1. Introduction

In the contemporary business environment, customers are considered to be the central element of all marketing actions, and CRM has become a priority for companies (Karakostas, Kardaras, & Papanthassiou, 2005; Rust, Zeithaml, & Lemon, 2000). This is highlighted by the claim of academics and practitioners that a customer orientation strategy is necessary for companies to survive and be successful in saturated markets (Heinrich, 2005). Business firms, regardless of the size of their organization, as a whole, are spending billions of dollars each year on CRM applications (Ngai, 2005; Zablak, Bellenger, & Johnston, 2004). Although some academic researchers have provided some evidence of the positive relationship between CRM and performance (Coltman, 2006; Mithas, Krishnan, & Fornell, 2005; Sin, Tse, & Yim, 2005), many academic and business reports have shown disappointing results (Chen & Wang, 2006; Heinrich, 2005; Richards & Jones, 2008; Rigby, Reichheld, & Scheffer, 2002; Zablak et al., 2004). In 2003, Gartner reported that about 70% of CRM projects result in either loss or no bottom line improvement in company performance (Richards & Jones, 2008). These paradoxical results are similar to what the academicians have called “productivity paradox” in the Information Technology (IT) literature (Albadvi, Keramati, & Razmi, 2007). This could be one of the reasons that CRM is an emerging field of inquiry (Richards & Jones, 2008).

To remedy the situation, we should first determine from where the problem stems. Going through the literature, we found two problems that are relevant to the CRM-performance link.

First, many companies have considered CRM as an IT solution and a technology for a marketing strategy (Peppard, 2000; Reinartz, Krafft, & Hoyer, 2004; Rigby et al., 2002). Through many years, IT researchers have been trying to answer the question of why IT does not confer direct competitive advantage. The clear reason, to which many scholars pointed, was that IT is easy to acquire in competitive markets. In other words, technology cannot bring about success or failure in a business strategy by itself (Mooney, Gurbaxani, & Kraemer, 1996). The same thing happens with CRM technology. Many firms can buy the same CRM technology from the same vendor. So, what makes CRM different in competitive markets? Because the same problem has led to the IT productivity paradox, we followed the IT and performance literature to gain helpful insights. By doing so, we saw that some researchers have worked on the resource-based view (RBV) of the firm and have extended it into the IT context to explain the productivity paradox of IT (Bharadwaj, 2000; Santhanam & Hartono, 2003; Melville, Kraemer, & Gurbaxani, 2004). Others have investigated complementary factors affecting the relationship between IT and performance (Keramati & Albadvi, 2006; Albadvi et al., 2007). More importantly, some researchers have made use of a process-oriented approach to explain how IT affects performance (Mooney et al., 1996; Radhakrishnan, Zu, & Grover, 2008).

The second reason is related to the concept of CRM. That is, technology is the common aspect between CRM and IT, but CRM by itself is not a technological concept. CRM has a multifaceted nature

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(Payne & Frow, 2005) and has not produced the expected results through lack of a common conceptualization (LaPlaca, 2004). Various models have been developed to show how it impacts organizational performance. These models are different in two ways: first, in conceptualizing key constructs of CRM, and second, in showing the interrelationships among the constructs. Zablah et al. (2004) worked on the CRM literature and identified and conceptualized five major perspectives on CRM (i.e., philosophy, strategy, technology, process, and capability). This was an important step toward a unified framework linking CRM to performance.

This paper addresses both problems mentioned above. The main objective of this study is to propose an integrated framework which traces the path from CRM investment to organizational performance. In this framework, we are going to:

1. Specify what resources are important for implementing CRM processes.
2. Put different perspectives on CRM, which have caused various strands of research, into a single integrated framework.
3. Display how and through which mechanisms CRM creates value for the firm.

By reviewing the literature on CRM and drawing on the RBV and the process-oriented approach, this study has worked towards the above objectives. The remainder of this paper is structured as follows: in the next section, the relationship between CRM and IT is reviewed. Then, the RBV, process-oriented approach, and their extension to CRM and the performance study will be discussed. A review of the models that link CRM to performance is also offered in Section 2. Then, in Section 3, the research framework and its dimensions are proposed. Research methodology is discussed in Section 4. Section 5 presents the results of the empirical study. The paper concludes with a discussion, managerial implications, and limitations in Sections 6 through 8.

## 2. Resource-based view and process-oriented approach in the CRM value creation model

In this section, the theoretical backgrounds of CRM and IT, RBV, and the process-oriented approach are studied. Meanwhile, why RBV and the process-oriented approach can be adopted based on the CRM premise will be discussed.

### 2.1. CRM and IT

In the mid-1990s, CRM emerged in the IT vendor community (Payne & Frow, 2005), and interest in it began to grow in that same decade (Ngai, 2005). Many have pointed to relationship marketing as the philosophical basis of CRM (Chen & Popovich, 2003; Grabner-Kraeuter, Moedritscher, Waiguny, & Mussnig, 2007; Payne & Frow, 2004; Reinartz et al., 2004; Zablah et al., 2004).

The literature shows that relationship marketing and IT formed the CRM phenomenon. As Bharadwaj (2000) mentions, “in achieving high levels of customer orientation, firms have found IT to be an indispensable factor”. In fact, CRM, as a customer orientation strategy, is rooted in the core IT capability of the firm. Payne and Frow (2005) confirm this by suggesting that CRM is more commonly used in the context of technology solutions and has been described as “information-enabled relationship marketing”. This is why many executives have mistaken CRM with technology solutions. For instance, in a recent survey among executives, Payne and Frow (2005) found that different meanings of CRM still exist, which are mostly technology-oriented. Some meant CRM as direct mail, a loyalty card scheme, a database, a help desk, or a call center. Others defined it as populating a data warehouse, undertaking data mining, and so on. This can be the reason of why academics believe that the negative reaction to CRM is more about the IT-dependent view of it, rather than the unimportance of customer relationship value (Coltman, 2007). Therefore, it is

important to note that CRM is a marketing strategy enabled by information technology aimed at creating mutually beneficial relationships between the firm and its customers (Lindgreen & Antico, 2004; Rigby et al., 2002; Zablah et al., 2004). The emphasis on viewing CRM as a strategy is now evident in the literature. Payne and Frow (2005) describe CRM as a continuum which, on the one side, is about the implementation of a specific technology solution, and, on the other side, is a strategy for managing customer relationships to create shareholder value. They conclude that CRM should be positioned in the broad strategic context which involves “a profound synthesis of strategic vision”. By defining clear goals for CRM strategy, its implementation can be as simple as making a “frequently asked questions (FAQ)” page on a company’s Web site, giving customers information about the availability of products (Karakostas et al., 2005), or simply telling employees to be more careful with customers (Rigby et al., 2002), or, it can be as complex as executing complicated systems and processes.

Meanwhile, and with the growing interest in CRM, the IT and Information Systems (IS) researchers found mixed results between IT investments and firm performance (Santhanam & Hartono, 2003). They called this phenomenon the “productivity paradox”, and tried to address the question of why investments in IT do not generate the expected results. To answer this question, some theories have been adopted and developed; one of them is a theory-based framework commonly referred to as the resource-based view (RBV) of the firm (Santhanam & Hartono, 2003).

The attributes of RBV make it suitable to be extended to the context of CRM. First, CRM is mainly grounded in marketing and IS fields. Barney, Wright, and Ketchen (2001) suggest that RBV has important implications for both fields. 1) In the IT field, RBV has been used to explore the ability of IT in bringing competitive advantage to firms. For instance, Melville et al. (2004), with a comprehensive view of other theories, explained the reason for choosing the RBV as the primary theory in their study (e.g., its firm roots in microeconomics and its usefulness in examining the IT resource). 2) In the field of marketing, the RBV can be used to analyze the resource-competitive advantage connection. In other words, we can analyze the fundamental process by which the transformation of resources to something valuable for customers happens (Barney et al., 2001). Second, the ‘people aspect’ in the definition of CRM as people, processes, and technology has gained much attention (Chen & Popovich, 2003; Reinartz et al., 2004; Rigby et al., 2002). The RBV has also made important contributions in the field of strategic human resource management (SHRM) and emphasized the strategic importance of people (Barney et al., 2001). In this regard, human capital skills and employee behavior have been considered to be two independent components of SHRM that affect sustainable competitive advantage. Third, CRM is a comprehensive strategy and a management approach aimed at creating superior value for the company (in terms of economic performance) and the customer (Payne & Frow, 2005). The RBV combines the underlying principles of economics with a management perspective (Peteraf & Barney, 2003).

We discussed the RBV’s usefulness in the CRM context in and of itself. Before we proceed to talk about the RBV in the context of CRM, we are going to discuss the question of why the RBV is better than other theories in the study of CRM. As mentioned, CRM’s main goal is to create value and superior performance. That is what the RBV is all about (i.e., a theory which “focuses on the fundamental drivers of performance and competitive advantage”) (Conner, 1991). From this standpoint, Conner (1991) finds the RBV to be a theory used in industrial organization (IO) economics and, as a result, compares it with five theories that have been significant in the evolution of IO. These refer to neoclassical economics, Bain-type IO, the Schumpeterian and Chicago responses, and transaction cost economics. Concluding that the RBV has at least one commonality and one difference with these theories, his study also states that the RBV “both reflects a strong

cumulative IO heritage and is at the same time unique in that it incorporates major departure from each of the five theories". Also, in examining resources–competitive advantage, Lockström (2007), among theories such as Bain-type IO, institutional theory, the Schumpeterian economics, and the contingency theory, bases his study on the RBV. Among the reasons for this are the plausibility and comprehensiveness of the theory as well as the reason mentioned above.

## 2.2. Resource-based view of the firm

Firm resources are the emphasis of the resource-based view of the firm, and they are seen as valuable firm specific assets (Melville et al., 2004). Resources can be specified as tangibles and intangibles that are used by organizations (Radhakrishnan et al., 2008). Barney (1991) proposed that, for attaining competitive advantage, firms compete on the basis of "unique" corporate resources that are valuable, rare, difficult to imitate, and non-substitutable by other resources. The various applications of the resource-based view have made it the dominant theoretical perspective in the strategic management literature (Bharadwaj, 2000; Melville et al., 2004).

IS researchers began to employ the resource perspective to explain business value creation through IT (Melville et al., 2004). They were quick to point out that IT systems are duplicable and can be purchased easily by competitors (Bharadwaj, 2000), and a narrow focus on technology can not be a source of sustained performance advantages for firms (Carr, 2003). Therefore, the business value of IT, which is capable of making an organization different from its competitors, is not achievable by increased IT spending (Radhakrishnan et al., 2008). Through the studies which have been done using this approach, researchers have identified tangible and intangible resources complementary that are to IT (e.g., human and business resources). Firms can create competitive advantage by assembling resources that work together to create organizational capabilities (Santhanam & Hartono, 2003). Capabilities measure the firm's ability to combine a number of resources efficiently to attain a certain objective (Coltman, 2007; Dutta, Narasimhan, & Rajiv, 2005). For instance, in a survey, Powell and Dent-Micallef (1997) empirically tested the association of human and business resources that are complementary to IT with the performance of retailers in the USA. The results showed that most of the retailers had not deployed the necessary human and business resources complementary to IT. The human resources explained significant performance differences in retail, as did the business resources to a far lesser degree, but IT did not. They concluded that, in the IT equation, human resources were the most neglected and difficult to master.

The results from other research have also shown that there is no correlation between IT investment and firm performance, or even that there is a negative correlation; this shows the fact that all investments in IT will not lead to the creation of effective IT capabilities (Bharadwaj, 2000). This contention is consistent with empirical studies showing the moderate to weak impact of CRM technology on the overall success of firms' relationship building efforts (Zablah et al., 2004).

How is the RBV applicable in the context of CRM? First, the same problem, which is the overemphasis on technology, has been addressed in both the IT (Powell & Dent-Micallef, 1997) and CRM (Payne & Frow, 2005; Rigby et al., 2002) literature. Second, the notion of capability has been presented as an important perspective on CRM, which refers to developing a mix of resources that enable firms to form their behavior toward individuals or groups of customers (Zablah et al., 2004). Third, based on the RBV, capabilities can be developed with a selective and path-dependent process (Coltman, 2007; Ray, Muhanna, & Barney, 2005) and, while this is consistent with CRM program success (Coltman, 2007), this could also be utilized in the CRM value creation model.

## 2.3. Process-oriented approach

Although the RBV has shown its robustness in the literature, it has some limitations. Since the RBV assumes that resources are always applied in the right way and for their best uses, it says little about how this is done. Therefore, the mechanisms that can lead a company toward competitive advantage should be specified (Melville et al., 2004).

Bharadwaj (2000) refers to the application of process-oriented models by researchers in examining the effects of IT on intermediate business processes. Mooney et al. (1996), by proposing a process-oriented model, state that, "in order to evaluate IT business value, the key business processes within each core business area must be identified and the linkages and contributions of IT to those processes should be defined". Radhakrishnan et al. (2008), by adopting Mooney et al.'s (1996) framework, empirically tested the mechanisms by which IT affects operational and management processes to create process capabilities. They compared the IT focal firms (firms that have effectively deployed, diffused, absorbed, and used IT) with their counterpart firms and showed that the IT focal firms enjoy better process capabilities and organizational performance. They concluded that, when IT becomes a differentiated resource, firms will get organizational effectiveness out of it. This evidence shows the importance of aligning the process-oriented approach with the RBV.

The application of the process-oriented approach, along with the RBV, in the context of CRM is relevant because:

1. CRM success is highly dependent on a process management orientation; by focusing on CRM processes, managers can ensure the effective deployment of organizational resources toward the creation of desired outcomes (Zablah et al., 2004).
2. A strategic approach suggests that, with a long-term view of resources, such as capabilities in the process of customer relationship development, an organization can enhance its performance (Eng, 2004).

## 2.4. CRM and performance

Several studies have been carried out to theoretically and empirically examine the relationship between CRM and performance. We have conducted a literature survey of studies linking CRM to firm performance. Table 1 provides a summary of our review. To have an analytical view of the reviewed studies, we have investigated each of them based on important issues that they have or have not addressed from the viewpoint of our own study. The results are exhibited in Table 2. As we can see, there are important issues addressed by each of them; some of them have addressed CRM more strategically while others are more technology-oriented. However, we can also see issues that have not been addressed by the studies. As a result, none of them provides a comprehensive view of CRM.

## 3. Research framework

The usefulness of every theory depends on proper replications, extensions, and generalizations that provide new insights and add to the existing stock of knowledge (Santhanam & Hartono, 2003). We reviewed several studies linking CRM to performance and elaborated on their important points (see Tables 1 and 2). The integrity and harmony between different components of CRM have a crucial role in CRM's ability to create value for the firm. Therefore, different components of CRM should be linked together to enable us to investigate its real value creation process. In doing so, by gaining insight from the RBV and process-oriented approach, we propose a framework to show the process through which value is created by CRM. In this framework (Fig. 1), as suggested by the RBV and the

**Table 1**  
Summary of studies linking CRM to firm performance.

Author(s)/date	CRM components	Moderators/mediators	Findings
Lüneborg and Nielsen (2003)	<ul style="list-style-type: none"> <li>IT knowledge</li> <li>Inter-firm cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Use of customer-focusing technology</li> <li>Organizational size</li> </ul>	<ul style="list-style-type: none"> <li>IT knowledge affects use of customer-focusing technology</li> <li>Use of customer-focusing technology affects relationship marketing performance but is not correlated with sales performance</li> <li>Organizational size is negatively associated with the relationship between “use of customer-focusing technology” and “customer relationship performance”</li> <li>Inter-firm cooperation in large banks has stronger impact on performance than small banks</li> </ul>
Eng (2004)		<ul style="list-style-type: none"> <li>Industry attractiveness</li> <li>Resource advantage of the customer portfolio</li> <li>Long-term value of customer portfolio</li> </ul>	<ul style="list-style-type: none"> <li>Industry attractiveness and resource advantage of customer portfolio are significantly and positively correlated to customer performance</li> <li>Long-term value of customer portfolio has a weak and positive correlation with customer performance</li> </ul>
Reinartz et al. (2004)	<p>CRM process at customer-facing level:</p> <ul style="list-style-type: none"> <li>relationship initiation</li> <li>relationship maintenance</li> <li>relationship termination</li> </ul>	<ul style="list-style-type: none"> <li>CRM technology</li> <li>Organizational alignment</li> </ul>	<ul style="list-style-type: none"> <li>The implementation of CRM processes is associated with better company performance for initiation and maintenance but not for termination</li> <li>A CRM-compatible organizational alignment moderates the impact of CRM processes on organizational performance</li> <li>Large proportion of CRM technology deployments do not perform to expectations</li> </ul>
Wang et al. (2004)		<ul style="list-style-type: none"> <li>Customer value (customer's perception)</li> <li>Customer satisfaction</li> <li>Brand loyalty</li> </ul>	<ul style="list-style-type: none"> <li>Customer value affects customer satisfaction</li> <li>Customer satisfaction affects customer loyalty</li> <li>Customer satisfaction and customer loyalty affect customer behavior based CRM performance</li> </ul>
Izquierdo and Cilla'n (2005)	<ul style="list-style-type: none"> <li>Attraction activities</li> <li>Loyalty and interaction programs</li> </ul>	<ul style="list-style-type: none"> <li>Market position</li> <li>Customers' perception</li> <li>Customers' loyalty</li> </ul>	<ul style="list-style-type: none"> <li>Attraction activities have a positive effect on market position which is not significant</li> <li>Attraction activities have a positive effect on customers' perceptions about the firm</li> <li>The effect of loyalty and interaction programs on customers' perceptions about the firm is significant</li> <li>Loyalty and interaction programs have a positive effect on customers' loyalty which is not significant</li> <li>Market position is enhanced directly by customers' perception and customers' loyalty and indirectly by attraction activities</li> </ul>
Mithas et al. (2005)	<ul style="list-style-type: none"> <li>CRM applications</li> </ul>	<ul style="list-style-type: none"> <li>Customer knowledge</li> <li>Supply chain integration</li> </ul>	<ul style="list-style-type: none"> <li>CRM applications are positively associated with improvement in customer knowledge</li> <li>Supply chain integration moderates the effect of CRM applications on customer knowledge</li> <li>There is a positive association between CRM applications and customer satisfaction</li> <li>Customer knowledge mediates the effect of CRM applications on customer satisfaction</li> </ul>
Roh et al. (2005)	<ul style="list-style-type: none"> <li>Process fit</li> <li>Customer information quality</li> <li>System support</li> </ul>	<ul style="list-style-type: none"> <li>Efficiency</li> <li>Customer satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>Process fit is the only CRM initiative that directly affects performance</li> <li>CRM components affect efficiency</li> <li>Efficiency affects customer satisfaction</li> <li>Customer satisfaction affects performance</li> </ul>
Sin et al. (2005)	<ul style="list-style-type: none"> <li>Key customer focus</li> <li>CRM organization</li> <li>Knowledge management</li> <li>Technology-based CRM</li> </ul>		<ul style="list-style-type: none"> <li>All variables affect marketing performance (customer satisfaction and trust)</li> <li>All variables affect financial performance (return on investment and return on sales)</li> </ul>
Greve and Albers (2006)	<ul style="list-style-type: none"> <li>CRM technology</li> <li>CRM technology usage</li> <li>CRM orientation</li> <li>Top management commitment</li> <li>Organizational alignment</li> <li>Customer valuation competence</li> <li>CRM activities</li> <li>Customer heterogeneity</li> </ul>		<ul style="list-style-type: none"> <li>CRM technology has an indirect effect on performance through CRM technology usage</li> <li>All variables have direct effect on initiation, maintenance, and retention performances except top management commitment and customer orientation which have a significant effect only on retention performance</li> </ul>
Coltman (2007)	<ul style="list-style-type: none"> <li>Superior CRM capability</li> </ul>	<ul style="list-style-type: none"> <li>Reactive market orientation</li> <li>Proactive market orientation</li> <li>Conversion feasibility</li> </ul>	<ul style="list-style-type: none"> <li>CRM capability affects reactive and proactive market orientation</li> <li>Conversion feasibility affects reactive and proactive market orientation</li> <li>Conversion feasibility does not significantly moderates the relationship between CRM capability and market orientation</li> <li>CRM capability affects firm performance</li> <li>Proactive market orientation partially mediates the relationship between CRM capability and firm performance, and the mediation effect of reactive market orientation is not at all significant</li> </ul>

(continued on next page)

Table 1 (continued)

Author(s)/date	CRM components	Moderators/mediators	Findings
Richards and Jones (2008)		CRM value drivers: <ul style="list-style-type: none"> <li>• improved ability to target profitable customers</li> <li>• integrated offerings across channels</li> <li>• improved sales force efficiency and effectiveness</li> <li>• individualized marketing messages</li> <li>• customized products and services</li> <li>• improved customer service efficiency and effectiveness</li> <li>• improved pricing</li> </ul> customer equity: <ul style="list-style-type: none"> <li>• Value equity</li> <li>• Brand equity</li> <li>• Relationship equity</li> </ul>	<ul style="list-style-type: none"> <li>• Without empirical testing</li> </ul>

process-oriented approach, CRM processes (e.g., knowledge processes), by exploiting CRM resources (e.g., CRM technology), direct them toward the capabilities of CRM (e.g., customization and individualization). This exhibits the value generation process of CRM, which could enhance the performance measures of an organization. Below, the dimensions of each of the constructs are identified. Then, the research propositions are developed.

### 3.1. Technological CRM resources

A review of different studies (e.g., Chen & Popovich, 2003; Peppard, 2000; Mithas et al., 2005; Xu & Walton, 2005; Zablah et al., 2004) reveals three aspects of CRM technology: 1) technologies that are used in the external operation with customers and facilitate a two-way communication between the firm and its customers; 2) technologies that are used in internal operations (primarily marketing, sales, and customer service) aimed at automating and facilitating activities; 3) technologies that act above the other two technologies and enable firms to analyze data and information and disseminate the resulting knowledge throughout the organization. This definition is consistent with the “CRM Techno-Functional” big picture set forth by Greenberg (2004, p. 48), which can be a complete definition of CRM technologies. This definition, which is based on META group segmentation, divides CRM technologies into collaborative, operational, and analytical categories.

#### 3.1.1. Collaborative CRM technologies

These technologies reach across customer touch points and can include different communication means that a customer might interact with, such as e-mail, phone calls, fax, Web site pages, and so on (Greenberg, 2004, p. 48). These technological tools are all mentioned as channels by which firms interact with their customers (Payne & Frow, 2005). They are of much importance because they have the ability to enhance the customer experience; moreover, various available channels (mainly electronic channels) are a large opportunity for firms to improve the scope and strength of business-to-business (B2B) customer relationships (Payne & Frow, 2004).

#### 3.1.2. Operational CRM technologies

These technologies, which are the customer-facing applications of CRM, automate marketing, sales, and customer service (Greenberg, 2004, p. 48). They consist of the information systems that act upon functions such as order management, billing, customer service, and so on. Product marketing information, transaction systems, online distribution, and customer service (Mithas et al., 2005), among others, are examples of these kinds of information systems. Furthermore, operational CRM technologies involve the Intranet and Extranet to link various applications and systems together in order to make the information and knowledge available at all touch points

within the firm and between the firm and its business partners (Xu & Walton, 2005). Finally, a unified customer database (Massey, Montoya-Weiss, & Holcom, 2001; Greve & Albers, 2006) plays a crucial role in CRM efforts. The obvious reason for this is that separate customer databases prevent a company from having a single unified view of its customers.

#### 3.1.3. Analytical CRM technologies

These technologies include tools that analyze customer data and present them in a form that is useful to the user (Greenberg, 2004, p. 48). For instance, with analytical CRM technologies, data stored in organizational databases are analyzed to help identify customer behavioral patterns, determine satisfaction levels, support customer segmentation, and so forth (Xu & Walton, 2005). Furthermore, customer information and profiles, distributed within and among functional areas by analytical tools, help the proactive marketing and sales effort (Massey et al., 2001).

### 3.2. Infrastructural CRM resources

Greenberg (2004, p. 451) argues that, over the past few years, because of the belief that CRM is a technology, it was subsumed to be a project of implementing a technology. As previously mentioned, CRM is a marketing strategy; thus, CRM success is more dependent on this strategy rather than on the amount of investment in technology (Rigby et al., 2002). Richards and Jones (2008) point to the same notion and state that technologies are the non-strategic aspect of CRM. From this, we can imply that non-technological CRM resources form the infrastructure of CRM in an organization and, therefore, we call them infrastructural CRM resources. Different characteristics of infrastructural CRM resources show that they can be divided into “human CRM resources” and “organizational CRM resources”.

#### 3.2.1. Human CRM resources

Reinartz et al. (2004) suggest that, when potential customers are establishing a relationship with a company, they would rather have contact with people than technology-driven systems. This highlights the importance of human CRM resources. In a survey among executives in the financial industry in the UK, 57% of the respondents stated that their CRM system users are not trained while 24% expressed that they are not well trained (Karakostas et al., 2005). These statistics can simply justify why many CRM technology deployments do not perform up to expectations.

The human resources of an organization generally consist of training, experience, relationships, and insights of the employees (Barney, 1991; Bharadwaj, 2000). In this study, two aspects of human CRM resources are considered. The first aspect is technical skills, which consist of the ability of employees to work well with the existing CRM applications and skills and experience to convert

**Table 2**  
Analysis of studies linking CRM to firm performance.

Author(s)/date	Addressed issues	Not addressed issues
Lüneborg and Nielsen (2003)	<ul style="list-style-type: none"> <li>Measures important IT skills such as “expertise in information analysis”. The importance of such scales is that the IT related capabilities are not attainable without having the required expertise in that field. More importantly, this study measures these scales from the RBV perspective.</li> <li>Considers performance on two levels. The first level, which is called “Use of customer-focusing technology”, measures such capabilities as “frontline support” and “market orientation”. This is important because it shows how IT knowledge (e.g., information analysis and software development) affects organizational performance.</li> </ul>	<ul style="list-style-type: none"> <li>Examines the relationship between “adoption of CRM” and “customer performance”; however, it does not explore the mechanism through which this adoption relates to performance.</li> <li>Does not take into consideration the CRM processes.</li> <li>The construct “inter-firm cooperation” is measured broadly; therefore, many human and organizational aspects may have gone unnoticed.</li> </ul>
Eng (2004)	<ul style="list-style-type: none"> <li>Evaluates the role of three important strategic perspectives in enhancing customer performance.</li> <li>Elaborates on the scales that measure the mentioned three constructs.</li> <li>Examines the variable “competitive characteristics” as one of the indicators of industrial perspective. This is important because, where the competition is high, the benefits of CRM can be more apparent.</li> </ul>	<ul style="list-style-type: none"> <li>Provides good insights for the study of CRM; however, it does not directly address CRM.</li> </ul>
Reinartz et al. (2004)	<ul style="list-style-type: none"> <li>Elaborates CRM processes at the customer-facing level.</li> <li>Defines and evaluates the effects of customer-facing CRM processes at three stages, which can be attractive for practitioners in assigning resources to those processes.</li> <li>Assesses the moderating effects of “CRM technology” on the relationship between CRM processes and performance.</li> <li>Enters “industry” as a control variable in the model and checks for variations across different industries. The interesting result of the study is that CRM benefits do not vary among industries.</li> <li>Measures both objective and perceptual company performance.</li> </ul>	<ul style="list-style-type: none"> <li>Measures the association between CRM processes and organizational performance directly. However, there should be some benefits gained by CRM which in turn enhance the organizational performance. This study does not address them.</li> </ul>
Wang et al. (2004)	<ul style="list-style-type: none"> <li>Evaluates behavioral aspects of CRM performance (e.g., emotional value and social value) in the relationship between CRM and performance.</li> <li>Measures the variables under study from customer’s perspective.</li> </ul>	<ul style="list-style-type: none"> <li>Focuses on behavioral outcomes of CRM and does not specify how CRM creates them.</li> </ul>
Izquierdo and Cilla’n (2005)	<ul style="list-style-type: none"> <li>Assesses the role of “market performance” (e.g., market position) as the mediator variable which links CRM-related activities to economic performance.</li> </ul>	<ul style="list-style-type: none"> <li>Does not enter IT in the relationship under study. This is because the study has been done from the relationship marketing (RM) perspective.</li> </ul>

**Table 2 (continued)**

Author(s)/date	Addressed issues	Not addressed issues
Mithas et al. (2005)	<ul style="list-style-type: none"> <li>Evaluates the role of “CRM applications” in improving “customer knowledge”. This is important since one of the key aspects of CRM is how to create and make use of customer knowledge.</li> <li>Considers both the “legacy customer-related IT applications” (a 12-item summative index) and “modern CRM applications” (a binary variable) as aspects of CRM applications. This is important because CRM applications are not limited to modern CRM packages.</li> <li>Assesses how “supply chain integration” (i.e., the extent to which firm’s suppliers and partners have access to firm’s customer-related data or applications) affects the improvement of customer knowledge by CRM applications. The interesting result is that, if firms share their customer-related information with supply chain partners, the CRM applications are more beneficial.</li> <li>It controls for the variables “IT intensity”, “industry sector” (offering goods versus offering service), and “firm size”.</li> </ul>	<ul style="list-style-type: none"> <li>Focuses merely on the technology perspective of CRM. Although the study addresses an important issue, the role and contribution of such aspects as strategy and people in the traced path have not been considered.</li> <li>Does not consider the capabilities and benefits related to improved customer knowledge or why improved customer knowledge leads to customer satisfaction. As the paper itself mentions, “only when firms act on this knowledge by modifying service delivery or by introducing new services will they truly benefit from their CRM applications.”</li> <li>Another area which has not been addressed in this study is related to the benefits gained from CRM applications in terms of increased revenue, profitability, etc.</li> </ul>
Roh et al.(2005)	<ul style="list-style-type: none"> <li>Considers important aspects, such as customer information and CRM systems.</li> <li>By entering such efficiency aspect of the CRM system as time and cost reductions, as the mediator scales, it explains why the CRM system affects profitability.</li> </ul>	<ul style="list-style-type: none"> <li>The CRM processes are defined too broadly.</li> <li>The focus of the study is mostly on the technological aspects of CRM. As we can see, the efficiency aspects in the study are also technology-oriented (e.g., time and cost reduction). However, as Greenberg (2004, p.483) suggests, increasing these kinds of efficiencies are good but they are not enough to improve the overall customer experience.</li> <li>The people aspect of CRM is the indispensable factor in a CRM program. This study does not address this issue directly.</li> </ul>
Sin et al. (2005)	<ul style="list-style-type: none"> <li>Defines four important aspects of CRM (specifically CRM organization and knowledge management) and puts effort into developing scales for them.</li> </ul>	<ul style="list-style-type: none"> <li>Does not pay attention to CRM processes other than knowledge management processes.</li> <li>Does not specify how the mentioned CRM aspects affect performance aspects. As the paper itself states, performance is a multi-dimensional construct and it is important to see the effect of CRM dimensions on other aspects of performance, such as efficiency and effectiveness.</li> </ul>
Greve and Albers (2006)	<ul style="list-style-type: none"> <li>Evaluates the effect of “CRM technology” on performance via the extent of its usage.</li> <li>In addition to measuring CRM processes at three stages, it measures CRM performance at those specific stages.</li> </ul>	<ul style="list-style-type: none"> <li>Specifies what affects CRM performance but does not explain why this happens.</li> <li>Does not pay enough attention to the people aspect of CRM, specifically employees.</li> </ul>

(continued on next page)

Table 2 (continued)

Author(s)/date	Addressed issues	Not addressed issues
Greve and Albers (2006)	<ul style="list-style-type: none"> <li>• Considers important variables, such as “customer orientation” and “top management commitment” as aspects of CRM.</li> <li>• Like Reinartz et al. (2004), controls for the variable “industry”.</li> </ul>	
Coltman (2007)	<ul style="list-style-type: none"> <li>• Builds on the RBV and measures the resource capabilities of CRM</li> <li>• Measures performance from the four perspectives of the balanced scorecard.</li> <li>• Examines the role of “conversion feasibility” (i.e., the firm’s ability to follow the best path when builds on CRM resource capabilities) as the moderating variable which impacts the benefits of CRM.</li> </ul>	<ul style="list-style-type: none"> <li>• Measures the CRM resources too broadly. As a result, many of its aspects may have gone unnoticed.</li> <li>• The market orientation construct does not reflect all of the benefits and capabilities related to CRM.</li> <li>• Does not address CRM processes directly.</li> </ul>
Richards and Jones (2008)	<ul style="list-style-type: none"> <li>• Shows the benefits related to CRM based on a very good synthesis of the literature.</li> <li>• Considers both strategic and operational aspects of CRM.</li> <li>• Combines the CRM and customer equity literature, which, from its authors view, helps executives to provide financial accountability for CRM investment.</li> </ul>	<ul style="list-style-type: none"> <li>• Puts effort on the outcomes of CRM and does not explain what creates them. In other words, the study concentrates on the outputs of CRM.</li> <li>• Does not provide empirical evidence for the study’s propositions.</li> </ul>

customer data into knowledge (Coltman, 2007; Melville et al., 2004; Powell & Dent-Micallef, 1997). The second aspect is the attitudes of customer-facing employees when they have any kind of contact with customers and the attitudes of non-customer-facing employees. Employees’ attitudes are mentioned as one of the important areas of change required to build a customer-oriented philosophy (Bell, Deighton, Reinartz, Rust, & Swartz, 2002).

3.2.2. Organizational CRM resources

CRM requires changes to an organizational culture and structure (Chen & Popovich, 2003; Sin et al., 2005). For a CRM program to be successful, some organizational elements are required. Among them, we can point to building a customer-centric philosophy (Bell et al., 2002; Chen & Popovich, 2003; Grabner-Kraeuter et al., 2007; Sin et al., 2005), setting CRM goals (Grabner-Kraeuter et al., 2007; Heinrich, 2005; Reinartz et al., 2004), defining incentive systems (Chen & Wang, 2006; Grabner-Kraeuter et al., 2007; Reinartz et al., 2004; Rigby et al., 2002), having a procedural and continued employee training program

(Greenberg, 2004, p. 452), and having top management commitment (Chen & Popovich, 2003; Coltman, 2007; Greve & Albers, 2006; Lin & Tseng, 2005).

3.3. CRM processes

Davenport (1993) classifies the business processes of a firm into operational processes and management processes. Operational processes comprise the activities of an organization’s value chain, while management processes refer to activities associated with the administration, allocation, and control of resources. IS researchers have adopted this classification, and have assessed the impact of IT on operational and management processes (Mooney et al., 1996; Radhakrishnan et al., 2008).

The definitions covering CRM processes have been diverse. Payne and Frow (2005) refer to CRM processes as “all strategic processes that take place between an enterprise and its customers”. Reinartz et al. (2004) believe that there are three possible levels for CRM processes: the functional level, the customer-facing level, and the company-wide level. Zablah et al. (2004), by confirming that there are different levels of aggregation for CRM process, argue that, with this view, the tasks that subsume under such processes are not clear. They suggest a more comprehensive view of CRM processes, which consists of knowledge management processes and interaction management processes.

As we can see, different definitions of CRM processes tend to define it at both operational and management levels—as Davenport (1993) had suggested for all business processes. By classifying CRM processes into operational and management CRM processes, we can specify the tasks under each one more clearly and distinctly.

3.3.1. Operational CRM processes

Operational CRM processes are those customer processes that happen at the operational level of the company. What Zablah et al. (2004) suggest is useful for classifying CRM processes at this level. At this level, CRM processes can be divided into operational knowledge processes and operational interaction processes. The operational knowledge processes consist of the activities related to customer knowledge at the operational level (e.g., gathering customer data and disseminating customer knowledge within the organization and between the organization and its customers) (Rollins & Halinen, 2005). The operational interaction processes try to build and strengthen customer relationships using available intelligence (Zablah et al., 2004).

3.3.2. Management CRM processes

Management CRM processes refer to strategic activities aimed at creating market intelligence and improving decision making related to resource allocation, new product or service development, and so on. For instance, Xu and Walton (2005) state that changes in the behavioral patterns of customers, which should be managed as a

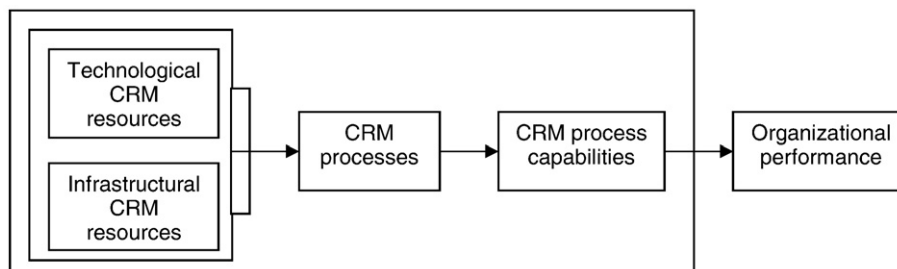


Fig. 1. CRM value generation process.

**Table 3**  
Item references.

Model constructs	Measurement criterions (indicators)	References
Technological CRM resources	Collaborative technologies	(Karakostas et al., 2005; Payne and Frow, 2004; Payne and Frow, 2005; Xu and Walton, 2005; Zablah et al., 2004)
	Operational technologies	(Greve & Albers, 2006; Lüneborg & Nielsen, 2003; Mithas et al., 2005; Sin et al., 2005; Xu & Walton, 2005)
	Analytical technologies	(Massey et al., 2001; Zablah et al., 2004)
Infrastructural CRM resources	Human resources	(Coltman, 2007; Mendoza, Marius, Pérez, & Grimán, 2007; Powell & Dent-Micallef, 1997; Sin et al., 2005)
	Organizational resources	(Bharadwaj, 2000; Chen and Popovich, 2003; Coltman, 2007; Greve and Albers, 2006; Lüneborg and Nielsen, 2003; Mendoza et al., 2007; Reinartz et al., 2004; Rigby et al., 2002; Sin et al., 2005)
CRM processes	Operational knowledge processes	(Greve & Albers, 2006; Karakostas et al., 2005; Massey et al., 2001; Reinartz et al., 2004; Rigby et al., 2002; Sin et al., 2005; Xu & Walton, 2005)
	Operational interaction processes	(Greve & Albers, 2006; Izquierdo & Cilla'n, 2005; Kim et al., 2003; Reinartz et al., 2004; Woodcock, Stone, & Foss, 2003)
	Management processes	(Greve & Albers, 2006; Kim et al., 2003; Reinartz et al., 2004; Rigby et al., 2002; Xu & Walton, 2005)
CRM Process capabilities	Operational process capabilities	Coltman (2007), Richards and Jones (2008), Rigby et al. (2002)
	Management process capabilities	(Bharadwaj, 2000; Coltman, 2007; Richards & Jones, 2008; Thomas, Reinartz, & Kumar, 2004)
Organizational performance	Customer satisfaction	(Eng, 2004; Park & Kim, 2003; Roh et al., 2005)
	Economic performance	(Lüneborg & Nielsen, 2003; Payne & Frow, 2005); Powell & Dent-Micallef, 1997; Reinartz et al., 2004)

management CRM process, can affect the operations of a company as well as the decision making related to strategy setting in the future.

### 3.4. Performance

Performance can be measured on both the process and the organizational level (Melville et al., 2004). Process-level performance measures the outcome of processes at the same level, while organizational-level performance indicates aggregate performance. For instance, Ray et al. (2005) studied the effects of IT resources on the performance of customer service processes. On the other hand, some studies measure performance directly at the organizational level (e.g., Reinartz et al., 2004) or at both levels (e.g., Coltman, 2007). In this study, performance is measured at both levels. The two performance measures are CRM process capabilities and organizational performance.

#### 3.4.1. CRM process capabilities

Capabilities are an 'intermediate transformation ability' between resources (i.e., inputs) and objectives (Dutta et al., 2005). As mentioned above, capabilities measure the firm's ability to combine efficiently a number of resources in order to attain a certain objective (Coltman, 2007). As a result, capabilities reflect a concept that is close to efficiency. Capabilities are hard to imitate because they are an intermediate between resources and outputs, and if the resources and outputs are observable, capabilities are not (Dutta et al., 2005).

To assess capabilities, we should see where the resources used have a major impact (Radhakrishnan et al., 2008). Some IT researchers believe that the effect of IT resources occurs mainly at the process level, and therefore evaluate IT capabilities at that level (Ray et al., 2005). This is consistent with the notion of capability by Amit and Schoemaker (1993). They argue that capabilities refer to "a firm's capacity to deploy resources, usually in combination, using organizational processes, to affect a desired end". Radhakrishnan et al. (2008), using this notion, point to process capabilities as the firm's capacity to apply IT to operational and management processes to affect desired firm performance.

Since the deployment of CRM resources (technological and infrastructural) is aimed at enabling CRM processes, CRM capabilities can be best described at the process level. Therefore, CRM process capabilities can be defined as the process abilities that are gained by effectively applying CRM resources to CRM processes and that enable firms to create superior value for their organization as well as their customers. Like CRM processes, there are both operational (e.g., customer support capabilities) and management (e.g., new product development capabilities) CRM process capabilities.

#### 3.4.2. Organizational performance

A performance measurement using bottom line financial metrics will be misleading. The reason is that, in today's competitive environment, traditional financial accounting measures, such as return on investment (ROI), can give misleading signals concerning continuous improvement and innovation (Kaplan & Norton, 1992). Specifically, for the cross-functional nature of CRM, traditional performance measurement systems may be inappropriate (Payne & Frow, 2005). Two organizational performance measures were used in this study: customer satisfaction and economic performance. It is important to note that the performance measurement in this study is consistent with the balanced scorecard (BSC) of Kaplan and Norton (1992) and the CRM BSC (i.e., customer interaction, customer knowledge, customer satisfaction, and customer value) of Kim, Suh, and Hwang (2003). On the one hand, CRM process capabilities address the 'internal business perspective' and the 'innovative and learning perspective'; on the other hand, the 'customer perspective' and the 'financial perspective' are considered to be the performance elements of CRM in several studies (Coltman, 2007; Lüneborg & Nielsen, 2003; Mithas et al., 2005; Reinartz et al., 2004; Roh, Ahn, & Han, 2005; Sin et al., 2005; Wang, Lo, Chi, & Yang, 2004), as well as in this study.

### 3.5. Research propositions

Now that each of the constructs is explained, the interrelationships among them should be justified. The theoretical meaning of each of the relationships shown in the proposed framework is elucidated below.

The role of CRM technologies in CRM efforts is clear in the literature. Reinartz et al. (2004) refer to CRM technology as the extent to which a firm uses supporting information technology to perform processes better. In fact, technology can enable getting the right information and knowledge to the right person at the right time (Massey et al., 2001). Firms can also use technology to manage and optimize their interactions with customers across customer touch points by creating a 360-degree view of the customers (Chen & Popovich, 2003; Karakostas et al., 2005). From this evidence, we posit the following hypothesis:

**H1a.** Technological CRM resources positively affect CRM processes.

As well as technological CRM resources, infrastructural CRM resources enable CRM processes. By designing an organizational



**Table 4**  
Instrument reliability and validity index.

Model constructs	Measurement criterions (indicators)	Scales	Scales loadings	Alpha	Eigenvalue				
Technological CRM resources (CRM-TECH)	(TECH-V1): Collaborative technologies	Tec1	0.590	0.625	1.911				
		Tec3	0.842						
		Tec4	0.650						
		Tec5	0.658						
		Tec7	0.670						
	(TECH-V2): Operational technologies	Tec8	0.542			0.731	2.583		
		Tec9	0.597						
		Tec10	0.689						
		Tec11	0.700						
		Tec12	0.720						
	Infrastructural CRM resources (CRM-INFRA)	(TECH-V3): Analytical technologies	Tec13			–	–		
			(INFRA-V1): Human resources			Hum1	0.814	0.833	3.279
						Hum2	0.796		
Hum3				0.694					
Hum4				0.717					
Hum5				0.718					
Hum6		0.687							
(INFRA-V2): Organizational resources		Org1	0.780	0.804	3.303				
		Org2	0.781						
		Org3	0.726						
		Org4	0.738						
		Org5	0.553						
		Org6	0.642						
	Org8	0.544							
CRM processes (CRM-PRO)	(PRO-V1): Operational knowledge processes	Pro1	0.609	0.776	2.864				
		Pro2	0.650						
		Pro3	0.642						
		Pro5	0.828						
		Pro6	0.770						
		Pro7	0.616						
		Pro9	0.531			0.565	1.767		
	(PRO-V2): Operational interaction processes	Pro10	0.718						
		Pro11	0.665						
	(PRO-V3): Management processes	Pro12	0.726	0.702	2.474				
		Pro13	0.645						
		Pro14	0.699						
		Pro15	0.746						
Pro17		0.524							
CRM Process capabilities (CRM-CAP)	(CAP-V1): Operational process capabilities	Cap1	0.498	0.741	2.567				
		Cap2	0.659						
		Cap3	0.801						
		Cap4	0.858						
		Cap5	0.711						
	(CAP-V2): Management process capabilities	Cap9	0.407	0.755	2.372				
		Cap10	0.918						
		Cap11	0.885						
		Cap12	0.762						
		(PER-V1): Customer satisfaction	Sat1			0.881	0.737	1.967	
			Sat2			0.729			
			Sat3			0.813			
	(PER-V2): Economic performance		Per1	0.780	0.886	4.177			
Per2			0.839						
Per4		0.689							
Per6		0.830							
Per7		0.791							
Organizational performance (ORG-PER)	Per8	0.721							
	Per9	0.744							

structure that facilitates CRM activities and conveying the importance of CRM activities to employees through CRM training, the more likely they are to stress these activities when they interact with customers (Reinartz et al., 2004). Moreover, Chen and Wang (2006) state that defining an incentive system supports employees to build quality relationships with customers. Finally, firm employees, by having extensive knowledge about the needs and preferences of individual

customers, play an important role in CRM processes (Zablah et al., 2004). As a result, we posit the following hypothesis:

**H1b.** Infrastructural CRM resources positively affect CRM processes.

H1 hypothesizes that CRM resources impact CRM processes. The affected CRM processes should enhance CRM process capabilities. In other words, when firms effectively apply CRM resources to CRM processes, they will be able to create operational and management CRM process capabilities. For instance, Xu and Walton (2005) refer to the customer segmentation process, which enables companies to provide more personalized product and service offerings for individual groups. Researchers also state that the understanding of customer needs, enabled by such CRM processes as the collection of customer data and an analysis of customers' behavioral patterns, is a requirement to enable CRM process capabilities, such as product and service customization and product development enhancement (Kim et al., 2003; Massey et al., 2001; Rigby et al., 2002). Channel integration is another CRM process capability which has been mentioned by Payne and Frow (2004). They state that, to improve this capability, firms should understand the shifts in channel usage patterns by customers. In doing so, firms need to track customers across channels and then analyze their behavior. Thus, we put forward the following hypothesis:

**H2.** The extent of influenced CRM processes is positively associated with improved CRM process capabilities.

Effective customer service can lead to a higher volume of sales (Wells, Fuerst, & Choobineh, 1999). In addition, Reinartz, Thomas, & Kumar (2005) state that the ability to balance resources and expenditures on customer acquisition and retention leads to more firm profitability. Since CRM process capabilities are heterogeneous, immobile, non-substitutable, and hard to copy by other firms in the industry, they are able to create a competitive position for a company. As mentioned above, capabilities can also be thought of as efficiency (Dutta et al., 2005), and the literature shows that increased efficiency will lead to improved performance outcomes for firms (Duncan & Elliott, 2004; Lindgreen & Antico, 2004). Accordingly, we posit the following hypothesis:

**H3.** CRM process capabilities are positively associated with organizational performance.

## 4. Research methodology

### 4.1. Instrument development

Scales for this survey were developed through extant literature reviews. Scales for CRM resources and processes were drawn out based on the defined classifications in Sections 3.1, 3.2, and 3.3. Table 3 exhibits the sources from which the scales were drawn. Process capabilities can be measured using aggregate metrics (e.g., "ratio of cost of goods sold to inventory" for measuring sales and marketing process capability) or non-aggregate metrics (e.g., "decision quality" for measuring decision making process capability), which are the best capability measures (Radhakrishnan et al., 2008). For instance, management CRM processes, which create market intelligence, can be assessed by the improved ability to target profitable customers, predict new market developments, and so on. In this paper, non-aggregate metrics are used to measure CRM process capabilities. Accordingly, besides the seven scales (CRM core benefits) developed by Richards and Jones (2008), five other scales were developed in this study.

Customer satisfaction consisted of three scales, and economic performance was designed as a subjective measure consisting of nine questions about the firms' overall profitability and sales growth. A

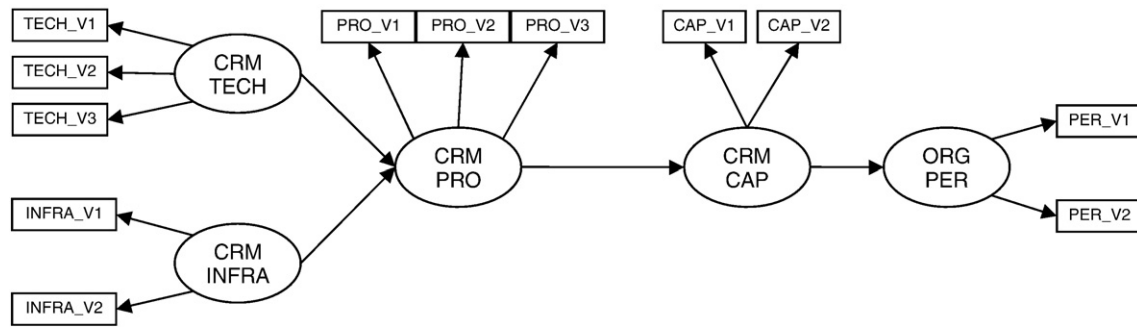


Fig. 2. Structural equation model.

subjective approach was used to measure the scales because respondents are usually reluctant to provide hard financial data. Furthermore, the association between subjective and objective measures is demonstrated in past studies (Sin et al., 2005). All of the scales were measured using five-point Likert scales, as shown in the Appendix A (under Measurement instrument).

Then, the questionnaire was pre-tested before sending it to respondents. It was sent to eight experts (academic and industrial), and they were asked for any modifications. After collecting their ideas, some modifications were made.

#### 4.2. Data collection and sampling

Industries with such characteristics as having a large customer base and market pressure to differentiate themselves from their competition are considered attractive for CRM research (Reinartz et al., 2004; Coltman, 2007). Based on these characteristics, the Internet service provider industry was selected for this research. Internet Service Providers (ISPs) are known as having very large customer bases. Also, much competition exists among them because customers can easily switch to competitors. There are almost 300 ISPs in Iran. Pre-survey telephone calls were made to each ISP to identify whether they would be prepared to participate in the survey, or whether they could provide contact details for the most appropriate person in their firm. Ninety-eight ISPs agreed to complete the survey and were selected as the sample for this research. A cover letter and questionnaire were sent to each participant. Follow-up telephone calls were done a week after sending the questionnaires. To increase the response rate, a meeting was the first way to give the questionnaires to respondents. Since there were time limits and not always access to some of the firms for meetings, the other respondents received the questionnaires by e-mail or fax. As a whole, 79 responses were collected, of which 77 responses were

usable. So, the ratio of the number of respondents who answered the survey divided by the number of cases in the sample yielded a 79% response rate.

The questionnaires were completed by people in organizational positions such as senior manager, IT manager, sales manager, marketing manager, or expert. It was important to see whether respondents' positions have significant influence on their views, and consequently on the research's findings. Using one-way ANOVA, the differences in answers were analyzed in relation to the respondents' organizational positions. It was shown that, in only three out of 74 measures, there are significant differences in responses by people in different positions ( $p < 0.05$ ). *T*-test results indicated that sales managers and experts, as compared to senior managers and IT managers, have more optimistic views about the deployment of a uniform customer database. The results also showed that senior managers have more pessimistic views about new product or service developments and overall company performance.

#### 4.3. Validity and reliability analysis

The validity and reliability of constructs is assessed in two steps. First (in this section), the reliability and validity of each criterion are measured separately. Second (in the next section), the average of the scales under each criterion is obtained in order to create the indicators of the model's constructs. Then, construct validity is assessed through Structural Equation Modeling.

Construct validity, which shows the extent to which measures of a criterion are indicative of the direction and size of that criterion (Albadvi et al., 2007), is analyzed through factor analysis. As previously mentioned, in the first step, each measurement criterion is considered as a distinct construct. The most common decision making technique for obtaining factors is considering factors with eigenvalues greater than one as significant (Olson, Slater, & Hult, 2005; Albadvi et al., 2007).

Factor analysis showed that some criterions have more than one factor. We used the data reduction technique and eliminated the scales which did not load on the relative criterion (the eliminated scales are specified in the Appendix A). Totally, out of 74 scales, 15 scales were eliminated and the analysis was done with the 59 remaining scales. Table 4 shows the final scale loads on the relative criterion. Cronbach's alpha was used to examine the reliability of our scales and research questions. We calculated the reliability indices for all final criterions to ensure the instrument's reliability. Table 4 shows that all criterions except TECH-V1 and PRO-V2 have an alpha over 0.7. An alpha of 0.63 was obtained for TECH-V1. This is acceptable with regard to the fact that the criterion is new (Ray et al., 2005; Albadvi et al., 2007). The alpha coefficient for PRO-V2 (0.57) is also close to the minimum recommended value for newly developed scales.

Table 5  
Overall fit indices.

Fit measure	Value	Recommended cut-off value (Hair et al., 1995; Roh et al., 2005)
Chi-square	56.3	
Df	49	
p-value	0.22	$\geq 0.05$
GFI	0.90	$\geq 0.9$
RMSR	0.048	$\leq 0.08$
TLI	0.97	$\geq 0.9$
CFI	0.98	$\geq 0.9$
AGFI	0.84	$\geq 0.8$
Normed chi-square (chi-square/DF)	1.15	$\leq 2$ or $\leq 3$

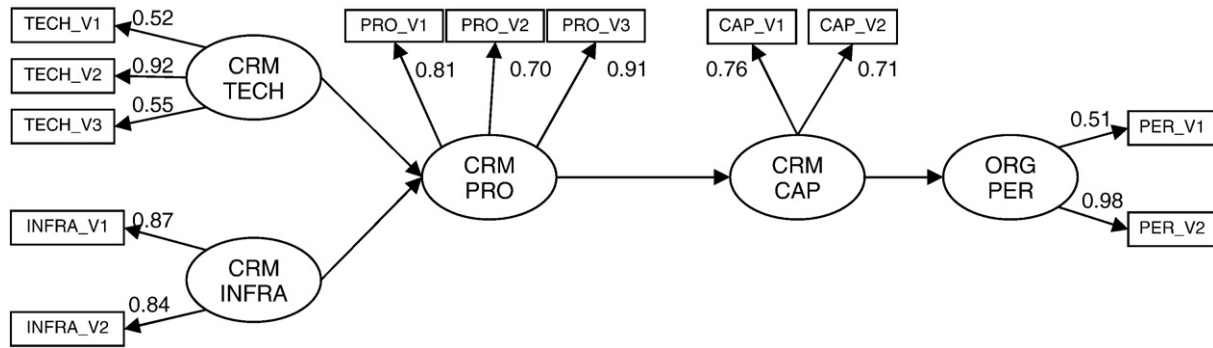


Fig. 3. Results of measurement model.

5. Results

When the validity and reliability of each criterion are specified, one of the methods for subsequent analysis is using summated scales. In doing so, the average of the scales under each criterion is measured and used as new observed variables in a subsequent analysis (Hair, Anderson, Tatham, & Black, 1995, p. 391). This method is used in this paper. For analyzing the model, Structural Equation Modeling (SEM) with Lisrel 8.51 was performed. In SEM, two models are assessed, the measurement model and the structural model. The schematic SEM model is shown in Fig. 2.

5.1. Overall model fit

In order to assess the overall model fit, three absolute fit measures (Chi-square, RMSR, and GFI), two incremental fit measures (TLI and CFI), and two parsimonious fit measures (AGFI and Normed Chi-square) were used. As shown in Table 5, all of the measures meet the recommended values. This shows a favorable fit for the model.

5.2. Measurement model

After the assessment of the overall model fit, in the measurement model, for each of the constructs, beyond the examination of the indicator loadings and their significance, the principal approach for assessing the measurement model is the composite reliability and variance extracted measure for each construct (Hair et al., 1995, p. 641). Using these measures, we can check for the convergent and discriminant validity of the constructs. Fig. 3 shows the loading of each indicator on the related construct. Table 6 shows descriptive statistics for each indicator and the results of the measurement model. It is specified that all the indicators have loaded highly on the relative

Table 6 Results of measurement model.

Model constructs	Measurement criteria (indicators)	Mean	Standard deviation	Indicators loadings	Sig.	Alpha	Variance extracted
CRM-TECH	TECH-V1	2.96	0.84	0.52	***	0.71	0.47
	TECH-V2	3.19	0.85	0.92	***		
	TECH-V3	2.84	1.30	0.55	***		
CRM-INFRA	INFRA-V1	3.66	0.67	0.87	***	0.84	0.73
	INFRA-V2	3.67	0.66	0.84	***		
CRM-PRO	PRO-V1	3.80	0.65	0.81	***	0.85	0.66
	PRO-V2	3.64	0.74	0.70	***		
	PRO-V3	3.75	0.64	0.91	***		
CRM-CAP	CAP-V1	3.58	0.65	0.76	***	0.70	0.54
	CAP-V2	3.67	0.73	0.71	***		
ORG-PER	PER-V1	3.73	0.61	0.51	***	0.74	0.61
	PER-V2	3.52	0.61	0.98	***		

\*\*\*p-value < 0.01.

constructs with significance levels of  $p < 0.01$ . In addition, Cronbach's alpha for all of the constructs exceeds the threshold value of 0.7, showing the reliability of the constructs.

Convergent validity, which shows the degree of agreement in the indicators of a construct, can be assessed using variance extracted values. According to Fornell and Larcker (1981), evidence of convergent validity occurs when the variance extracted values exceed 0.5 for one construct. Table 6 shows that all constructs have acceptable convergent validity except CRM-TECH, which falls somewhat short of 0.5. Discriminant validity, as recommended by Fornell and Larcker (1981), can be assessed by comparing the variance shared by constructs with the variance extracted value for each construct. The variance shared by two constructs is measured by the squared correlation between them. The distinction between two constructs is demonstrated when the variance extracted from each construct exceeds the shared variance between the two constructs. The diagonal elements in Table 7 (the variance extracted by the constructs) are greater than the off-diagonal elements (the squared correlation between the constructs). This is indicative of discriminant validity.

5.3. Structural model

Having assessed the overall model and aspects of the measurement model, we can now examine the estimated coefficients among the constructs. The path coefficients and their significance levels are shown in Fig. 4 and hypotheses tests are shown in Table 8. As hypothesized, the infrastructural CRM resources significantly influence CRM processes (H1b). The effect of technological CRM resources on CRM processes is also supported (H1a), though with a significant level of  $p < 0.1$ . The significant path coefficient between CRM processes and CRM process capabilities supports Hypothesis H2. Finally, CRM process capabilities significantly impact firm performance (H3).

To explore the findings further, all 77 firms were categorized based on CRM-INFRA and CRM-TECH. First, they were ranked on the overall infrastructural CRM resources' scale scores and divided at the midpoint (3.66) into two sub-samples, labeled "CRM Infrastructure-Intensive" ( $n = 44$ ) and "CRM Infrastructure-Lagging" ( $n = 33$ ) firms. For the second time, they were ranked on the overall technological CRM

Table 7 Squared correlation of the constructs (diagonal elements are variance extracted values).

	CRM-TECH	CRM-INFRA	CRM-PRO	CRM-CAP	ORG-PER
CRM-TECH	0.47				
CRM-INFRA	0.25	0.73			
CRM-PRO	0.13	0.21	0.66		
CRM-CAP	0.16	0.21	0.34	0.54	
ORG-PER	0.06	0.22	0.21	0.25	0.61

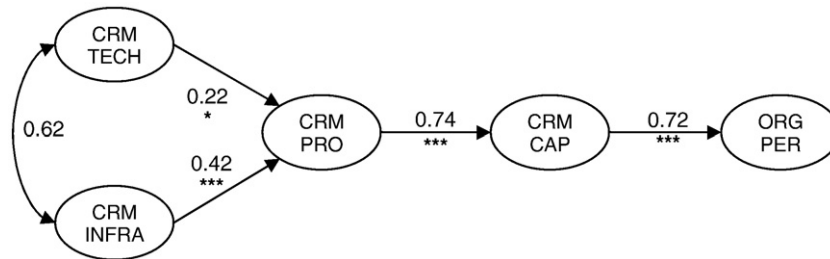


Fig. 4. Results of structural model. Path coefficient/\*p-value<0.1; and \*\*\*p-value<0.01 (one-tailed).

resources' scale scores and divided at the midpoint (3.08). This time, they were labeled as “CRM Technology-Intensive” (n=35) and “CRM Technology-Lagging” (n=42) firms. Using the two threshold midpoints, all firms were categorized into four groups as shown in Table 9. Then, a one-way ANOVA was used to compare these four groups based on CRM-CAP and ORG-PER. The results in Table 10 show that there are differences in CRM-CAP and ORG-PER in different groups. To clarify the differences, the groups were compared pair-wise with a T-test.

Table 11 shows that there is no significant difference among CRM process capabilities and no difference among the performance of I-TECH/L-INFRA firms and L-TECH/L-INFRA firms. Also, the I-INFRA firms with different usages of technological CRM resources do not demonstrate significant differences in CRM process capabilities and performance. The data explain that other pairs of groups are significantly different in both CRM process capabilities and performance.

6. Discussion

This paper first provides evidence that the RBV and the process-oriented approach are applicable in the CRM context. Then, it provides a summary of the current literature on CRM and performance, and proposes a framework that links CRM to organizational performance based on the RBV and process-oriented approach. This framework highlights the importance of CRM resources, which should be taken into consideration by firms that want to implement CRM. It shows that not all firms can attain a sustainable competitive advantage through CRM. For creating business value from CRM efforts, firms should consider the valued CRM resources and absorb and effectively deploy them to create CRM process capabilities which are inimitable and not substitutable by other firms. In fact, it is apparent that there exists a chain from CRM resources to CRM process capabilities, and a successful CRM program depends on maneuvering through this chain properly (Keramati, Mehrabi, & Mousakhani, 2008).

Roh et al. (2005) suggest that examining the impact of CRM on performance in a causal path can have more meaningful implications for CRM planning and implementation. This notion is important because CRM is a multidimensional concept, and, by considering some dimensions while ignoring others, it may be difficult to explain the findings of empirical investigations. This study, on the one hand, integrates the various perspectives on CRM offered by Zablah et al. (2004), which are philosophy, strategy, technology, process, and capability. On the other hand, it addresses the paradoxical results of CRM by putting together and examining the perspectives in a causal

path which exhibits the CRM value generation process. In other words, it shows how and through which mechanisms CRM creates value for the firm.

The application of the RBV along with the process-oriented approach in the IT context is based on the logic that the effect of IT resources (technological and complimentary) will most obviously appear on the process level (Ray et al., 2005). In CRM, this logic is more vigorous. Aside from the above-mentioned reason, process is one of the concepts of CRM, and the deployment of appropriate inputs (CRM resources) into CRM processes will result in creating desired outputs (CRM process capabilities).

One of the important efforts in this study is the review and analysis of previous studies (Tables 1 and 2) that examine the relationship between CRM and performance. This, by itself, can be of much use for academicians and practitioners who want to see how various studies have addressed different aspects of CRM.

In the Results section, the post-hoc analysis of CRM-intensive/lagging firms is valuable. First, it divides the 77 firms, which are all from the same industry, into four groups based on different usages of technological and infrastructural CRM resources. Second, it provides useful insights into how different usages of CRM resources are related to different CRM process capabilities and performances among firms.

It is specified that technological and infrastructural CRM resources are the role players in creating value through CRM. However, the difference between their contributions is noticeable through the results. Our findings indicate the substantial effect of infrastructural CRM resources (human and organizational CRM resources) on CRM processes. This is consistent with the finding of other studies which have worked on these aspects (Greve & Albers, 2006; Lüneborg & Nielsen, 2003; Reinartz et al., 2004; Sin et al., 2005). On the other hand, technological CRM resources only partially affect CRM processes. This confirms Rigby et al.'s (2002) idea that CRM objectives can be fulfilled without huge investments in technology. However, the role of technology cannot be denied, and we predicted a stronger relationship. In this regard, Reinartz et al. (2004), who could not find a positive moderating effect of CRM technologies on the relationship between CRM processes and organizational performance, suggest that their finding is partially consistent with the existing evidence that the performance of large proportions of CRM technologies are not consistent with the expectations. This is reasonable in our study as well. By comparing L-TECH/I-INFRA firms with I-TECH/I-INFRA firms in Table 9, we see that both groups have intensely deployed infrastructural CRM resources, one with low and the other with high usage of

Table 8 Test of the hypothesized model.

Hypothesis	Estimate	S.D.	t-Value	Test results
H <sub>1a</sub> CRM-TECH → CRM-PRO	0.22	0.16	1.38*	supported
H <sub>1b</sub> CRM-INFRA → CRM-PRO	0.42	0.17	2.51***	supported
H <sub>2</sub> CRM-PRO → CRM-CAP	0.74	0.14	5.14***	supported
H <sub>3</sub> CRM-CAP → ORG-PER	0.72	0.26	2.81***	supported

\*p-value<0.1; and \*\*\*p-value<0.01 (one-tailed).

Table 9 Categorization of companies based on CRM-TECH and CRM-INFRA (I: intensive and L: lagging).

		CRM-TECH	
		Intensive	Lagging
CRM-INFRA	Intensive	I-TECH/I-INFRA (n = 25)	L-TECH/I-INFRA (n = 19)
	Lagging	I-TECH/L-INFRA (n = 10)	L-TECH/L-INFRA firms (n = 23)

**Table 10**  
ANOVA of the differences between firms with different usages of CRM resources.

		Sum of squares	df	Mean square	F	Sig.
CRM-CAP	Between groups	6.80	3	2.27	8.08	0.00
	Within groups	20.47	73	0.28		
	Total	27.27	76			
ORG-PER	Between groups	5.89	3	1.96	8.71	0.00
	Within groups	16.44	73	0.23		
	Total	22.32	76			

technological CRM resources. The results in Table 11 show that, although there is a slight difference between their performances, it is not significant. In addition to the above-mentioned reason, the weak association between technological CRM resources and CRM processes could be due to the usage of an inappropriate combination of three technological CRM resources by the firms.

The results also show that CRM resources, when applied effectively, offer strategic and operational benefits, such as individualization, customization, new product/service developments, etc. These benefits, in turn, not only bring about customer satisfaction but also enhance profitability measures. This is consistent with the findings of Radhakrishnan et al. (2008), who found that when firms effectively use IT to create process capabilities, they enjoy better performance. The results are more highlighted by comparing CRM-intensive firms with CRM-lagging firms in the industry. It is revealed that companies that have only developed technological CRM resources do not have better process capabilities and performance; on the other hand, firms that have developed all of their CRM resources together enjoy better process capabilities and better organizational performance.

The results in Table 11 prove that investing in CRM technology without considering other aspects of it may lead to negative results for the performance of the firm. This is due to the fact that CRM technology *per se* may not even pay off the amount of investment in it. This result is consistent with the study of Powell and Dent-Micallef (1997), which found that IT-lagging firms performed slightly better than IT-intensive firms.

Another important implication of this study is in highlighting the importance of the human part of CRM, and confirming different notions from researchers about it (Bell et al., 2002; Karakostas et al., 2005; Rigby et al., 2002). The findings are also consistent with the notion of “achieving competitive success through people” (Pfeffer, 1995).

Although this effort relies mainly on the RBV and process-oriented approach, other theories have also shed light on it. First, the agency theory discusses designing incentive systems to maximize profitabil-

**Table 11**  
T-test of the differences between firms with different usages of CRM resources (I: intensive and L: lagging).

		L-TECH/ L-INFRA	I-TECH/ L-INFRA	L-TECH/ I-INFRA	I-TECH/ I-INFRA
		3.31 <sup>a</sup>	3.16 <sup>a</sup>	3.78 <sup>a</sup>	3.84 <sup>a</sup>
		0.57	0.35	0.34	0.50
L-TECH/ L-INFRA	3.24 <sup>b</sup>		ns <sup>d</sup>	**d	**d
I-TECH/ L-INFRA	3.37 <sup>b</sup>	ns <sup>c</sup>		**d	**d
L-TECH/ I-INFRA	3.86 <sup>b</sup>	**c	*c		ns <sup>d</sup>
I-TECH/ I-INFRA	3.88 <sup>b</sup>	**c	**c	ns <sup>c</sup>	
	0.40				

\*\*Difference is significant at the 0.01 level (2-tailed).

\*Difference is significant at the 0.05 level (2-tailed).

<sup>a</sup> Mean and standard deviation of ORG-PER in groups.

<sup>b</sup> Mean and standard deviation of CRM-CAP in groups.

<sup>c</sup> Difference of CRM-CAP between groups.

<sup>d</sup> Difference of ORG-PER between groups.

ity (Reinartz et al., 2004). Second, the contingency theory states that company profit is associated with appropriate organizational structures (Reinartz et al., 2004). In addition, this theory suggests that setting strategic goals are necessary for attaining desired objectives (Richards & Jones, 2008). Third, the theory of transaction-cost economics (TCE) has been used in studying the organizational impacts of IT (Powell & Dent-Micallef, 1997) and posits that IT can add value by interacting with organizational processes (Radhakrishnan et al., 2008). One of the aims of this interaction is to minimize the costs, which can be achieved by CRM systems (Roh et al., 2005), although it is not the primary objective of CRM (Greenberg, 2004, p. 483). Fourth, the theory of production has been used to explain the economic impact of IT (Melville et al., 2004) and is concerned about the way in which firms transform various inputs into outputs. Hitt and Brynjolfsson (1996) state that certain levels of output can be produced by using different combinations of inputs. As a result, because firms at first will seek to invest in an input with the highest value from its use, “theory predicts that rationally managed firms will keep investing in an input until the last unit of that input creates no more value than it costs”. This creates a good insight into CRM in that firms should look for CRM resources that create the most benefits and prioritize and modify their investment in them.

Finally, for each of the constructs, appropriate dimensions and scales are defined according to the literature. Specifically, the CRM resources are measured with five dimensions, namely, collaborative CRM technologies, operational CRM technologies, analytical CRM technologies, human CRM resources, and organizational CRM resources. The importance of specifying measures for CRM resources is that it enables us to measure the extent of their usage across firms. Aside from measuring CRM resources, CRM processes and CRM process capabilities were measured on both management and operational levels, which can be useful for practitioners as well as scholars.

## 7. Managerial implications

This study has several implications for managers who are seeking to leverage their spending on CRM. First, managers should note that the findings of this research can be applicable to other industries. This is based on the cross-cultural, multi-industry study done by Reinartz et al. (2004), which suggests that CRM benefits do not vary greatly across industries. Nevertheless, CRM has a dynamic nature, and managers could seek other CRM processes and process capabilities as well.

Second, many companies start their CRM from departments such as marketing, sales, service, or, in the best case, a cooperation among them. Although they are the most relevant departments, this limit the value creation of CRM. It should be noted by managers that CRM is an all-encompassing endeavor. In other words, it is a multidimensional phenomenon that sheds light on all levels of the organization. If managers want to get the most out of CRM, the first step is to define an organization-wide customer strategy and define clear goals for it. It is not only the first step but also the most important one because not all firms can act based on the same customer strategy. As Zablah et al. (2004) state, customers might sometimes not be interested in specific relationships. As a result, if one company uses the same specific relationships as the other one does, it might receive no ultimate positive results or even receive a negative result from its CRM efforts. After defining the customer strategy, managers should express their commitment to this strategy. This is important in at least two ways: first, they commit to providing the necessary resources at the right time; second, when employees see the importance of CRM to managers, they perceive its importance as well.

Third, it was mentioned that capabilities can be developed with a selective and path-dependent process. This study showed the path through which CRM process capabilities can be developed. It was also mentioned, based on the theory of production, that different

combinations of inputs can produce a certain level of output. Thus, regarding the costs and benefits associated with CRM, managers who want to invest in CRM could leverage their spending on a suitable combination of infrastructural and technological CRM resources in order to create suitable outputs (CRM process capabilities).

Fourth, CRM processes are requisite to convert CRM inputs (CRM resources) into outputs (CRM process capabilities). Therefore, in an important step in their CRM program, firms should define the specific CRM processes (management and operational) that fit their CRM goals and, by assigning definite CRM resources, put them properly in place. After that, they should ensure that the CRM processes are working as expected.

Fifth, technology not only is not the first step but also is one of the final steps in defining and assigning CRM resources. In fact, managers should see what CRM goals they are going to pursue, what processes they want to support, and which benefits they want to achieve. After that, they can choose the appropriate technological CRM resources to provide support for their CRM processes.

Finally, managers should consider the importance of the human aspect of CRM. First, they should convey the importance of CRM to employees and the roles and contributions which are expected from each of them. Second, CRM needs skills and expertise (e.g., behavioral and technical). Managers should note that achieving CRM success through people needs people with enough skills, experience, and expertise to be deployed. This can be done by using available experts inside the company or training the employees to get the necessary skills. Otherwise, managers can deploy part of the human CRM resources by employing people from outside of the company. Overall, by conveying the importance of CRM to employees who have the required skills and expertise and designing incentive systems to motivate them, they can effectively and efficiently influence the CRM processes.

**8. Limitation and future research directions**

Two main limitations of this study which should be addressed in future research are the small sample size and the measurement of satisfaction indicators from the firm's vision. The first one is related to the small sample size of 77 firms; however, in the present study, the internal consistency of indicators, the validity, and reliability of model constructs are assessed and approved in two stages (see Tables 4, 6, and 7). This consistency shows the stability of the measures (Albadvi et al., 2007). The second limitation of this study stems from inaccessibility to the customers' views about the firms. In other words, the nature of CRM is about relationships, and, as mentioned throughout this paper, CRM benefits are perceived by both the company and its customers. Thus, having the opinions of firms' customers can enable us to get more meaningful results.

Since CRM is an evolving phenomenon (Reinartz et al., 2004), it will contain new characteristics, processes, and benefits in the future. Therefore, future research efforts can work to add to the existing stock of knowledge about CRM.

Although our results can be generalized in other industries, it is useful that future research efforts focus on accumulating further empirical evidence across other industries. It would be important specifically because future research efforts can further test the validity and reliability of measures used in this study.

Another suggestion for future research is related to the size of the organizations, which was measured by the number of employees. The number of employees of the firms in this study was under 185. These firms are usually known as small to medium-sized enterprises. Future studies can explore the findings of this study in large enterprises.

Finally, as mentioned in the Discussion section, regarding the theory of production, a suitable ground for future research efforts concerns developing methods that prioritize CRM resources and suggest the best combination of CRM resources based on their contribution in creating CRM benefits. This enables companies to modify or optimize their investments in CRM.

**Appendix A. Measurement instrument**

Please indicate the extent to which the following technologies have been used by your company, using a 1–5 scale (1 = not at all; 3 = to some extent; and 5 = strongly):

Code	Scales
CRM-TECH	<i>Technological CRM resources</i>
TECH-V1	Collaborative technologies
Tec1	1. Fax
Tec2	2. Internet (later deleted)
Tec3	3. E-mail
Tec4	4. M-commerce
Tec5	5. Call center
Tec6	6. Help desk (later deleted)
TECH-V2	Operational technologies
Tec7	7. Information systems in marketing activities (e.g., product marketing information, personalized marketing offerings, etc.)
Tec8	8. Information systems in sales activities (e.g., transaction systems, online distributions, etc.)
Tec9	9. Information systems in customer service and support activities (e.g., customer service, customer satisfaction tracking, etc.)
Tec10	10. Intranet
Tec11	11. Extranet
Tec12	12. A uniform customer database
TECH-V3	Analytical technologies
Tec13	13. Customer data analysis tools (e.g., data mining, statistical tools for market decision, etc.)

Please indicate the extent to which you agree with the following statements, using a 1–5 scale (1 = strongly disagree; 3 = neither agree nor disagree; and 5 = strongly agree):

Code	Scales
CRM-INFRA	<i>Infrastructural CRM resources</i>
INFRA-V1	Human resources
Hum1	1. We have the sales and marketing expertise to succeed in CRM
Hum2	2. We have the service and support expertise to succeed in CRM
Hum3	3. Our employees are well trained in the use of customer relating technologies
Hum4	4. We have skills and experience at converting data into customer knowledge
Hum5	5. We have the right technical employees to provide technical support for the utilization of computer technology in building customer relationships
Hum6	6. Our employees commit to the customer strategy
Hum7	7. Our employees are willing to help customers in a responsive manner (later deleted)
Hum8	8. In general, our people accept change readily (later deleted)
INFRA-V2	Organizational resources
Org1	1. We have a customer strategy and have defined its objectives
Org2	2. Our top executives have clearly indicated their commitment to a customer strategy
Org3	3. Our customer orientation strategy is organization-wide and not limited to departments such as marketing, sales, or customer service
Org4	4. Our organizational structure is meticulously designed around our customers
Org5	5. We have an employee Incentive System and employee performance is measured and rewarded based on meeting customer needs and on successfully serving the customer
Org6	6. We have a systematic procedure to improve skills of employees on CRM techniques
Org7	7. We focus on profitable customer groups (later deleted)
Org8	8. In our organization, there is good cooperation between marketing, sales, and customer service departments
Org9	9. We have redesigned the front office and examined information flows between the front office and the back office (later deleted)
Org10	10. We have shared resources across organizational units to create synergy (later deleted)

Please indicate the extent to which CRM resources have influenced the following CRM processes in your company, using a 1–5 scale (1 = no effect; 3 = moderate effects; and 7 = extreme effects):

Code	Scales
CRM-PRO	CRM processes
PRO-V1	Operational knowledge processes
Pro1	1. Recognizing valuable customers
Pro2	2. Identifying new customers
Pro3	3. Providing proper information about your products/services for your customers
Pro4	4. Making the proper information and knowledge derived from customer-related applications available to marketing and sales departments (later deleted)
Pro5	5. Making the proper information and knowledge derived from customer-related applications available to customer service and support department
Pro6	6. Continuous collection of customer data through sales, marketing, and customer service channels
Pro7	7. Tracking your customers when they contact you through the channels you have provided
Pro8	8. Providing your customers with information about the availability of other products/services that you market (later deleted)
PRO-V2	Operational interaction processes
Pro9	9. Welcome new customers
Pro10	10. Handling customers' requests, problems, and complaints personally by those responsible
Pro11	11. Cross/up selling your products
Pro12	12. Treating your customers differently based on their value to your organization
PRO-V3	Management processes
Pro13	13. Segmenting customers
Pro14	14. Studying about the products or services your customers need
Pro15	15. Tracking your customer satisfaction level
Pro16	16. Studying the costs and benefits of retaining a customer (later deleted)
Pro17	17. Analyzing your customer data
Pro18	18. Studying your customers' defection intentions
Pro19	19. Studying your existing customers' behavioral patterns (Purchasing behavior, contacting behavior, satisfaction and loyalty, retention and defection patterns)

Please indicate the extent to which the following CRM process capabilities have been improved in your company, using a 1–5 scale (1 = no improvement; 4 = moderate improvement; and 7 = extreme improvement):

Code	Scales
CRM-CAP	CRM process capabilities
CAP-V1	Operational process capabilities
Cap1	1. Individualizing marketing messages to your customers
Cap2	2. Customizing your products/services for your customers
Cap3	3. Integrating your offerings across channels
Cap4	4. Sales force efficiency and effectiveness
Cap5	5. Providing customized pre- and post-sale customer service
Cap6	6. Level of ease for customers to conduct business with you (later deleted)
Cap7	7. Managing logistics and supply chain efficiently (later deleted)
CAP-V2	Management process capabilities
Cap8	8. Targeting profitable customers (later deleted)
Cap9	9. Pricing
Cap10	10. Predicting new market developments
Cap11	11. New product/service developments
Cap12	12. Allocating your marketing expenses to customer acquisition and customer retention

Please indicate the extent to which your company has been improved over the past two years based on the following indicators, using a 1–5 scale (1 = no improvement; 4 = moderate improvement; and 7 = extreme improvement):

Code	Scales
ORG-PER	Organizational performance
PER-V1	Customer satisfaction
Sat1	1. Providing very good convenience for your customers
Sat2	2. Customers' commitment to your company (based on relationship period, relationship intensity, number of referrals the customers make, etc.)
Sat3	3. Overall customer satisfaction

Over the past two years, how do you assess your company on the following statements? Using a 1–5 scale (1 = strongly disagree; 3 = neither agree nor disagree; and 5 = strongly agree):

Code	Scales
ORG-PER	Organizational performance
PER-V2	Economic performance
Per1	1. Achieving market share in our company has been outstanding
Per2	2. Our sales growth has been outstanding
Per3	3. Cost reduction in our company has been outstanding (later deleted)
Per4	4. Our profitability has been outstanding
Per5	5. Our financial performance has been outstanding (later deleted)
Per6	6. Achieving market share in our company has exceeded our competitors
Per7	7. Our sales growth has exceeded our competitors
Per8	8. Our profitability has exceeded our competitors
Per9	9. Overall performance in our company has been outstanding

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