



How does CRM technology transform into organizational performance? A mediating role of marketing capability[☆]

Woojung Chang^{a,1}, Jeong Eun Park^{b,*}, Seoil Cha^c

^a Culverhouse College of Commerce and Business Administration, University of Alabama, Box 870225, Tuscaloosa, AL 35487, United States

^b Department of Marketing, College of Business Administration, Ewha Womans University, 11-1 Daehyun-dong Seodaemun-gu, Seoul, 120-750, South Korea

^c Business School, Korea University, 5 Anam-dong Seongbuk-gu Seoul 136-701, South Korea

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ABSTRACT

Customer relationship management (CRM) technology has attracted significant attention from researchers and practitioners as a facilitator of organizational performance. Even though companies have made tremendous investments in CRM technology, empirical research offers inconsistent support that CRM technology enhances organizational performance. Given this equivocal effect and the increasing need for the generalization of CRM implementation research outside western context, the authors, using data from Korean companies, address the process concerning how CRM technology translates into business outcomes. The results highlight that marketing capability mediates the association between CRM technology use and performance. Moreover, a customer-centric organizational culture and management system facilitate CRM technology use. This study serves not only to clarify the mechanism between CRM technology use and organizational performance, but also to generalize the CRM results in the Korean context.

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1. Introduction

In today's competitive business environment, the success of firm increasingly hinges on the ability to operate customer relationship management (CRM) that enables the development and implementation of more efficient and effective customer-focused strategies. Based on this belief, many companies have made enormous investment in CRM technology as a means to actualize CRM efficiently. Despite conceptual underpinnings of CRM technology and substantial financial implications, empirical research examining the CRM technology–performance link has met with equivocal results. Recent studies demonstrate that only 30% of the organizations introducing CRM technology achieved improvements in their organizational performance (Bull, 2003; Corner and Hinton, 2002). These conflicting findings hint at the potential influences of unexplored mediating or moderating factors and the need of further research on the mechanism by which CRM technology leads to improved business performance.

Such inconsistent results of CRM technology implementation are not limited to western countries which most of previous CRM research originated from. Even though Korean companies have poured tremendous resources to CRM initiatives since 2000, they also cut down investment in CRM technology drastically due to disappointing returns (Knowledge

Research Group, 2004). As a result, Korean companies are increasingly eager to corroborate the returns from investment in CRM. In the eastern culture like Korea that promotes holistic thinking focusing on the relationships between a focal object and overall context (Monga and John, 2007), CRM operates as a two-edged sword. Because eastern culture with holistic thinking tends to value existing relationship with firms or contact point persons as a standard of selecting products in comparison to western culture with analytic thinking focusing on attributes of products, CRM in eastern cultures can be more effective to improve organizational performance if executed appropriately or can be more miserable if implemented horribly than that of western culture with the similar level of CRM implementation. Considering the possibility of more powerful influence of CRM on organizational performance in eastern culture, CRM research in eastern culture is expected to show the process by which CRM technology translates into organizational outcomes more definitely and to generalize successful CRM implementation to cross-cultural setting neglected by prior CRM studies. In particular, Korea is supposed to be a reasonable context in that it possesses unique feature of holistic thinking more vividly and experienced recently increasing need to clarify the reason of conflicting results in CRM implementation more sincerely than any other eastern countries. This is not to say, however, that significant questions relating to how CRM technology leads to firm's outcome and generalizability have not emerged.

Thus, the objectives of this paper are to suggest an integrative framework describing how CRM technology use translates into organizational performance and to make a generalization of the mechanisms involved in the successful CRM implementation. Specifically, we discussed some antecedents and outcomes of CRM technology use and

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* Corresponding author.

E-mail addresses: wchang@cba.ua.edu (W. Chang), jepark@ewha.ac.kr (J.E. Park), schaiy@korea.ac.kr (S. Cha).

¹ Tel.: +1 205 348 6183; fax: +1 205 348 6695.

situate our findings in the Korean domain. In our proposed model, we suggest that marketing capability operates as a key mediating variable. We reason that while firms may possess CRM technology, the enhancements to performance resulting from increased CRM technology use are conditioned on the extent to which CRM technology improves firm's marketing capability by providing sales and service support, data integration, and analysis effectively. In addition, we believe that customer-centric organizational culture and management system will facilitate CRM technology use on the basis of recent emphasis on the integration of organizational variables with CRM solutions to enhance the outcome of CRM technology implementation (e.g., Jayachandran et al., 2005; Payne and Frow, 2005). Understanding of determinants and outcomes of CRM technology use helps clarify what firms should do to improve CRM performance.

The remainder of this paper proceeds as follows. First, we discuss our focal constructs of interest and the relationships among them on the basis of a theoretical model stressing the importance of marketing capability to CRM technology vis-a-vis business performance. Second, we detail the research method utilized in our study and analyze the model's overall fit and our hypotheses via a structural equation model. Finally, the paper concludes with a discussion of the findings as well as managerial and theoretical implications.

2. Theoretical background and hypotheses

2.1. CRM technology use

In the past, CRM was viewed by researchers and practitioners primarily as an investment in software technology. Indeed, CRM technology has been often equated with CRM (Reinartz et al., 2004). However, more recent treatments have depicted CRM as a more expansive and holistic approach in developing sound and productive relationships with customers, while CRM technology, one of major components of CRM, has been defined as the information technology that is deployed for the specific purpose of managing customer relationships (Chen and Popovich, 2003; Sin et al., 2005). In this context, CRM technology use equates to, "the degree to which firms use supporting information technology," to manage customer relationships effectively (Reinartz et al., 2004, p. 296).

Specifically, we focus on four activities of CRM technology: sales support, service support, analysis support, and data integration and access support. In that the general role of CRM technology is assumed to support sales force and service (Meuter et al., 2000; Speier and Venkatesh, 2002), CRM technology involves supportive activities to boost sales and adaptive service. Beyond such front office applications, CRM technology is expected to include collection, integration, and analysis of customer data (Jayachandran et al., 2005). Accordingly, CRM technology is referred to as an information technology used to encourage sales support, service support, data analysis, and data integration.

2.2. Marketing capabilities

To understand marketing capabilities, it is necessary to begin by identifying capabilities in the organization. In the resource-based view (RBV) perspective, firm is composed of a bundle of resources and capabilities, leading to differential performance in firms (Barney, 1991; Peteraf, 1993). While resources are defined as tangible or intangible factors that firm uses to achieve its business objectives, capabilities are referred to as organization's repeatable patterns of core routines and skills in carrying out various activities effectively (Amit and Schoemaker, 1993; Finney et al., 2008; Grant, 1991). In a similar vein, marketing capability is defined as an organization's repeatable pattern of actions to carry out the marketing-related needs of the business effectively.

Previous research concerning marketing capability helps to develop the concept more specifically. Vorhies and Morgan (2003) divide marketing capability into two subsets, specialized capabilities and architectural capabilities. The former has to do with, "...the specific marketing

mix-based work routines," while the latter deals with, "the marketing strategy formulation and execution work routines," (Vorhies and Morgan, 2003, p. 106). In other words, firm's marketing capability demonstrates the ability not only to accomplish marketing mix-based activities such as pricing, advertising, and channel management efficiently but also to develop and execute marketing strategy appropriately. Even though the specific marketing mix-based routines play a pivotal role in marketing activities, architectural capabilities in the marketing capabilities literature appear to be prominent because architectural capabilities have been assumed to have stronger impact on business performance than specialized capabilities. For example, Morgan et al. (2003) paid attention to the effect of architectural marketing capabilities with two subdimensions of formulation and execution of marketing strategies on the adaptive performance of export ventures. Slotegraaf and Dickson (2004) also investigated the influence of marketing planning capabilities composed of skills to anticipate environment changes (planning capabilities) and respond to those changes (implementing capabilities) on firm performance. In accordance with this research stream, we consider marketing capability to be firm's ability derived from two prominent components: marketing planning ability and marketing implementation ability.

2.3. Linking CRM technology use to marketing capabilities

The most fundamental and critical issue of CRM research stream has been to identify its direct effect on organizational outcome. Despite the strong conceptual association, previous studies investigating the direct relationship were replete with conflicting results, illuminating the need for further research that examines the role of mediating and contingent variables.

We suggest that marketing capability bridges the association between CRM technology use and performance. According to Morgan and Hunt (1994) and Webster (1992), building and managing customer relationships delivers the essence of marketing concept. Specifically, CRM technology enables firms to formulate more appropriate marketing strategies and to execute specific marketing actions more efficiently and quickly by offering superior front-line support and the access of integrated customer data (Chen and Popovich, 2003; Dutta et al., 1999). Moreover, Payne and Frow (2005) posit that CRM "requires a cross-functional integration of processes, people, operations, and marketing capabilities" (p.168) and Boulding and colleagues (2005) suggest that "the effectiveness of CRM activities depends on how CRM is integrated with preexisting capabilities" (p. 158). Taken together, CRM technology enhances marketing capability by helping managers and employees achieve specific marketing objectives more effectively and efficiently. We therefore advance the following:

H1. CRM technology use is positively related to marketing capability.

2.4. Linking marketing capabilities to performance

Organizational performance is a multidimensional construct. According to organization theory, organizational performance can be largely classified into effectiveness and efficiency (e.g., Bonoma and Clark, 1988; Lewin and Minton, 1986). Effectiveness means, "...the degree to which desired organizational goals are achieved," whereas efficiency represents, "...the ratio of organizational resource inputs consumed to goal outcomes achieved," (Vorhies and Morgan, 2003, p. 103). However, recent research tends to include customer-related outcomes in business performance (Kaplan and Norton, 1996). Therefore, we measure organizational performance through customer satisfaction, efficiency (profitability), and market effectiveness.

Based upon the RBV literature, strategy researchers have recognized organizational capabilities as critical to performance enhancement and competitive advantage (Ghosh et al., 2001; Greenley et al., 2005; Ruiz-Ortega and Garcia-Villaverde, 2008). Within marketing literatures, marketing-related capabilities are also assumed to be key drivers of firm's

performance (Day, 1994; Slotegraaf and Dickson, 2004). Thus, we believe firms with superior marketing capability exhibit characteristics that enable them to enjoy superior performance and sustain competitive advantage. Prior empirical studies have demonstrated the extent to which marketing capabilities serve as drivers that lead to differential performance among companies. For example, Dutta, Narasimhan, and Rajiv (1999) indicated that marketing capability had the greatest impact on firm performance among three factors leading to favorable output in high-technology markets: marketing capability, R&D capability, and operations capability. Vorhies and Morgan (2005) also showed that marketing planning capability and marketing implementation capability had the positive impact on business performance. In considering well-established advocacy that the success of firms depends on its development of well-conceived marketing strategies and its ability to execute them (Day and Wensley, 1988; Menon et al., 1999), we propose the following hypothesis:

H2. Marketing capability is positively related to performance.

2.5. Determinants of CRM technology use

Mounting evidence suggests that CRM technology acquisition is merely necessary but not sufficient condition for successful CRM implementation (Day, 2003; Ko et al., 2008). Day (2003) paid attention upon three organizational components which should combine to improve superior customer-relating capability and consequently organizational performance: organizational orientation, configuration, and information. In a similar vein, Jayachandran et al. (2005) also regarded customer relationship orientation and customer-centric management system as antecedents to relational information processes. At the heart of these papers are there two apparent findings. Firms need to be in harmony with other organizational variables to extract higher returns from CRM technology and the changes of organizational orientation (culture) and management system toward customers are expected to play a pivotal role in achieving that purpose.

2.5.1. Customer-centric organizational culture

Customer-centric organizational culture represents organization's deeply embedded mind-set, values, and norms that make customer relationship top priority (Day, 2003; Deshpande et al., 1993). Organizational culture (orientation) influences firm's choice of objectives and the means to accomplish such goals, namely firm's resource assignment (Jayachandran et al., 2005; Moorman, 1995). Therefore, customer-centric organizational culture encourages employees of the organization to consider customer relationships a valuable asset and to utilize the tools to facilitate good relationship with customers (i.e. CRM technology) more actively. Thus, we expect:

H3. A customer-centric organizational culture is positively related to CRM technology use.

2.5.2. Customer-centric management system

Management system of an organization determines how it organizes the firm's entire structure, business processes, and its incentives. Therefore, a customer-centric management system is defined as an organizational configuration geared toward changing the firm's structure, processes, and incentive system toward one that concentrates on customer relationships (Day, 2003; Jayachandran et al., 2005). Even though prior studies have utilized various terminologies in describing customer-centric management system such as configuration (Day, 2003), CRM organization (Sin et al., 2005), and customer-centric business process (Chen and Popovich, 2003), they have commonly suggested that a customer-centric management system accelerates the use of CRM technology by making employees regard customers as their standard criteria of decision making. In particular, the use of incentives based on customer-related metrics motivates organizational members to utilize the tools (CRM technology) vigorously (Day, 2003). Thus, we postulate:

H4. A customer-centric management system is positively related to CRM technology use.

3. Method

3.1. Sample and data collection

Boulding and colleagues (2005) recommend that CRM research results seek to generalize, rather than be idiosyncratic to the chosen research domain. Given the increasing need to generalize CRM research results to various contexts, Korean domain is believed to provide a reasonable context for this study. Above all, Korea in eastern culture holds the vivid characteristic of holistic thinking to value the relationship with firms or contact point persons when selecting products compared with western countries with analytic thinking focusing on attributes of products. It may help clarify the mechanism concerning how CRM technology enhances organizational outcomes because the impact of CRM technology on performance in eastern culture is assumed to be stronger than that of western cultures that prior research has paid attention to. In particular, Korea is a fascinating domain in that it regards the relationship with firms as critical criteria to choose products (services) more vividly than any other eastern countries. In addition, it makes Korean context suitable that Korean firms recently confront the imperative to show the returns from CRM technology investment after experiencing disappointing results in CRM project investment. Although it is helpful to generalize CRM research results to more various domains not to just one context (i.e. Korea), we believe that Korean setting with both holistic thinking that has a stark contrast with prior CRM studies focusing on western cultures and imperative need to clarify CRM technology process will be an appropriate starting point to expand the results to a variety of settings.

Using a list of top 500 Korean firms in terms of sales in various industries, we developed a contact list of key informants in the marketing or CRM department of each company. Questionnaires were sent to key informants in charge of CRM activities at their firms who agreed to participate in this research, either by e-mail or by fax. Because there is much possibility that the identities and specific answers of respondents open to the public by collecting data through personal e-mail, we left the decision to select either e-mail or fax to entirely respondents. Furthermore, we promised the confidentiality of the identities and specific responses of informants and in practice only the three researchers had access to the data. Also we got the permission of the human sample protection from the research center of the university. After repeatedly urging informants to answer the questionnaire by the method they themselves chose, 209 of the total 434 questionnaires were finally collected and used, a response rate of 48.16%.

Of the 209 respondents, 76 (36.36% of the total responses) answered the questionnaire by fax and the remaining (63.64% of the total responses) was collected by e-mail. We compared the two sets of responses from fax and e-mail to examine possible differences regarding the characteristics of the two groups. The result showed that the means of relevant variables did not differ significantly between fax and e-mail based respondents, leading us to pool the data. In addition, a comparison of early and late responders to the survey indicated no significant differences in the major constructs of these two sets, leading us to conclude that the likelihood of non-response bias is minimal (Armstrong and Overton, 1977). The characteristics of the respondent companies and responders are presented in Table 1.

3.2. Measures

All of the measures used in this study were drawn from existing literature and were translated and adapted for the context of this research. In the process of translating original English measures into Korean, we conducted several interviews with managers responsible for CRM. Additionally, the translated questionnaires were pretested by 25 MBA marketing students at a local Korean university in Seoul, Korea.

Table 1
The characteristics of the sample.

	Factors	Frequency	Percent
Industry	Manufacturing	83	39.7%
	Services	35	16.7%
	Finance	55	26.3%
	Distribution	21	10.0%
	Others	15	7.2%
Number of employees	1–499	22	10.5%
	500–999	50	23.9%
	More than 1000	137	65.6%
Position of responder	Manager	79	37.8%
	General manager	42	20.1%
	Others	88	42.1%
Work experience with the company (years)	0–3	56	26.8%
	4–6	46	22.0%
	7–10	50	23.9%
	11–20	51	24.4%
	More than 20	6	2.9%

Following the interviews and pretests, some of the items were modified to better fit the context for this study. All measures used 7-point, Likert-type scales with the anchors 1 = strongly disagree to 7 = strongly agree. All actual measures and correlations between items are summarized in Appendix A and B. A test of reliability on the basis of Cronbach's alpha shows that the measures for each construct exceed Nunnally and Bernstein's (1994) standard of 0.70 as the lower limit of acceptability.

CRM technology use was measured with an initial 16-item scale adapted from the Jayachandran and colleague (2005) measures. Specifically, we included four subsets in measuring CRM technology use: sales support (5 items), service support (3 items), analysis support (5 items), and data integration and access support (3 items). This scale proved adequately reliable (alpha = 0.926).

Marketing capability was operationalized using 9 items adapted from the works of Morgan et al. (2003) and Vorhies and Morgan (2005). These 9 items were categorized into two subdimensions: marketing planning capability (5 items) and marketing implementation capability (4 items). These scales also proved to be adequately reliable (alpha = 0.969).

In measuring organizational culture, we adopted Jayachandran et al.'s (2005) measures. Organizational culture was measured using 4 items (alpha = 0.873). Additionally, we initially assessed management system using 6 items adapted from Jayachandran et al. (2005) and excluded 3 items from the final analysis (alpha = 0.812).

Organizational performance was initially assessed using 11 subjective measures adopted from Vorhies and Morgan (2005). Three sub-dimensions, customer satisfaction (4 items), market effectiveness (4 items) and

market profitability (3 items) were included. However, we excluded customer satisfaction dimension in the final analysis based on measurement purification. Although the scales of the organizational performance do not include objective measures, Naman and Slevin (1993) indicate that managerial subjective assessment of firm's performance is consistent with objective performance. Selected scales of the organizational performance had good reliability (alpha = 0.924).

3.3. Measurement validity

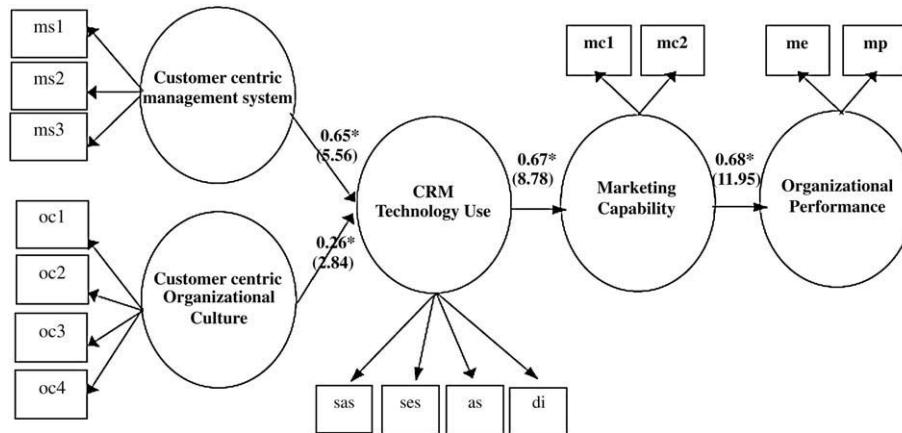
Following the two-stage approach suggested by Anderson and Gerbing (1988), we used LISREL 8.80 to test the estimated measurement model prior to assessing the structural relationships. The testing model with all indicators is presented in Fig. 1. All measurement scales were evaluated based on the following criteria: unidimensionality, and convergent and discriminant validity (Anderson and Gerbing, 1988). The results of the measurement models show that our selected items provide good explanations for each construct. As indicated by the results of CFA (Table 2), all items have a significant loading on their corresponding constructs (0.41 < SMC < 0.89; 8.53 < T-value < 23.44), demonstrating adequate unidimensionality and convergent validity (Anderson and Gerbing, 1988). To evaluate discriminant validity, we conducted a pairwise comparison of the constructs in the modification indices. All the latent-trait correlations between constructs were found significantly different from each other, establishing discriminant validity (Anderson and Gerbing, 1988). Overall, we conclude that our measures demonstrate good measurement properties.

The results from validity testing as described above were then used to help estimate the overall structural model. The overall fit of the model in Fig. 1 is highly acceptable. The χ^2 ($\chi^2 = 191.83$ with 84 degrees of freedom) is significant ($p = 0.000$), and other goodness of fit statistics are favorable. The CFI of 0.98 is excellent, confirming that the data fit the proposed structural model. In addition, other goodness of fit indexes meet commonly accepted standards (GFI = 0.89; AGFI = 0.84; RMSEA = 0.079).

4. Results

4.1. Results of hypotheses tests

In analyzing the results of the structural model, we conclude that all proposed relationships received strong support. Standardized estimates of all hypothesized paths are presented in Fig. 1. In Hypotheses 1 and 2, we predicted positive relationships between CRM technology use and



$\chi^2=191.83$, d.f.=84, p-value=0.00000, CFI=0.9753, GFI=0.8905, RMSEA=0.079
*Significant at the p-value of .05 or less

Fig. 1. Model test results.

Table 2
The results of confirmatory factor analysis.

Construct	Organizational culture				Management system			CRM technology use				Marketing capability		Performance	
	Oc1	Oc2	Oc3	Oc4	Ms1	Ms2	Ms3	SAS	SES	AS	DI	Mc1	Mc2	P1	P2
Estimates	1.00	0.96	1.04	0.96	1.00	1.23	1.11	1.00	0.94	1.08	1.12	1.00	1.03	1.00	1.00
(t-value)		(11.32)	(12.85)	(11.96)		(10.24)	(8.53)		(11.69)	(12.27)	(12.82)		(23.44)		(10.91)
SMC	0.62	0.58	0.72	0.63	0.41	0.61	0.66	0.62	0.60	0.65	0.70	0.87	0.89	0.74	0.59

SMC: squared multiple correlation; chi-square = 130.84 with 79 *df*, $p = 0.000$, RMSEA = 0.056.

Standardized coefficient and t value in parentheses. t-values greater than 1.96 are significant.

One indicator of all constructs is set to one to standardize the measurement scale.

marketing capability (H1), and between marketing capability and performance (H2). As Fig. 1 suggests, we found that CRM technology use has a significant positive influence on marketing capability ($\beta = 0.67$, $t = 8.78$, $p < 0.01$), supporting H1. Additionally, marketing capability is positively related to performance ($\beta = 0.68$, $t = 11.95$, $p < 0.01$), bolstering H2.

In testing the direct relationship of a customer-centric organizational culture on CRM technology use suggested by Hypothesis 3, we found a significant relationship ($\beta = 0.26$, $t = 2.84$, $p < 0.05$). Finally, Hypothesis 4 postulated the direct association between a customer-centric management system and CRM technology use. As indicated in Fig. 1, we observed support for this direct link ($\beta = 0.65$, $t = 5.56$, $p < 0.01$). Therefore, Hypothesis 4 was also supported.

4.2. A mediating role of marketing capabilities

We then sought to determine the mediating role of marketing capability between CRM technology use and organizational performance. If the indirect effect of CRM technology use on performance is significant in comparison to the direct effect of CRM technology use on performance, this helps to demonstrate the important role of marketing capabilities in implementing CRM.

To perform this empirical test of mediation, we analyzed an additional model, adding a direct path from CRM technology use to organizational performance. We then compared the chi-square values of the proposed model with those of the alternative model (Bagozzi and Yi, 1988). Chi-square difference tests showed that the addition of a direct path does not improve the fit significantly at the 0.05 level (proposed model: $\chi^2 = 191.83$ with *df* 84 vs. alternative model: $\chi^2 = 191.57$ with *df* 83).

In addition, we compared the magnitude of direct and indirect effects between CRM technology use and performance. The total effect of CRM technology use on performance is 0.64, with an indirect effect of 0.50 and a direct effect of 0.14. Therefore, we can conclude that the indirect effect through marketing capability is more dominant than the direct effect in explaining the total effect between CRM technology use and organizational performance.

5. Discussion and limitations

5.1. Implications

This study makes several meaningful theoretical contributions in the study of successful CRM technology implementation. First and most importantly, this research provided and empirically tested an integrative model that portrays how CRM technology use translates into organizational performance. In the face of conflicting results between CRM technology use and performance, there has been an imperative to make clear the overall mechanism and the conditions by which CRM technology successfully enhances business effectiveness (Boulding et al., 2005; Day, 2003; Jayachandran et al., 2005). To this end, we concentrated on the mediating role of marketing capability between CRM technology use and organizational performance and two drivers of CRM technology use, customer-centric organizational culture and management system. As a consequence, we demonstrated a compre-

hensive framework demonstrating that customer-centric organizational culture and management system facilitate use of CRM technology, and that CRM technology use leads to improved marketing capability, in turn enhancing organizational performance.

The second contribution this paper makes is to generalize CRM research results to the Korean context with different thinking way to value the relationship. As Boulding et al. (2005) pointed out that CRM research results seek to generalize rather than be idiosyncratic, there has been a growing need for cross-industrial and cross-cultural generalization of results. In particular, it seems to be valuable to expand CRM research to Korean domain in that it has experienced a drastic reduction in CRM technology investment because of disappointing returns even though it is a highly attractive place to apply successful CRM implementation. Our study adds to the richness of CRM implementation research and broadens the understanding of this phenomenon.

In addition, this study responds to an imperative call for showing accountability and returns of marketing expenditures. To demonstrate accountability and ROI of marketing spending continues to be a key topic of concern in the marketing area for the past several years. As marketing function within an organization is increasingly under pressure to corroborate returns from marketing investment, proving the process by which the investment in CRM technology leads to improved organizational performance helps clarify the role and contribution of marketing within an organization. In particular, showing the effect of CRM technology on organizational outcomes seems to be valuable in that CRM requires tremendous financial investment and considerable organizational change.

We also believe that our findings provide important managerial implications for both academicians and business practitioners. First, firm's marketing capability has a vital role in successful CRM technology implementation. Our results showed that CRM technology use enhanced business performance through marketing capabilities. This means that the use of CRM technology alone is not sufficient and performance improvement was achieved when firms facilitated its marketing capabilities through effective usage of CRM technology. Thus, we highly recommend that managers pay increased attention to raising their companies' marketing planning and implementation abilities by utilizing CRM technology.

Additionally, our paper reinforces the importance of customer-centric organizational culture and management system in order to boost CRM technology effectively. Recent research has generally agreed that successful CRM can be achieved through the interrelationship of technology, process, people, and culture (Day, 2003; Sin et al., 2005). Based on our results, it is very important to create a customer-centric organizational culture and to organize business processes and incentives to encourage employees to consider customers their top priorities.

5.2. Limitations and future research

Despite insights gained through our results, future research should aim to overcome a few limitations of this study. First, this research relied on survey responses provided by one key informant per firm. Although we tried to acquire multiple responses from all firms, our final analysis

utilized single responses due to the lack of multiple key informants and restriction of data collection. Even though the single response approach has long been fruitfully used in strategy research (Hult et al., 2005), using multiple informants might be recommended for further research.

In addition, all the measures of this study are based on survey responses that were filled out by one respondent. Thus, the reported relationships may be influenced by common method bias. Although the self report method has generally been used in marketing strategy research due to the limit to objective performance data, caution should be exercised when dealing with the research results.

This research did not investigate the possibility that marketing capability could be a moderator between CRM technology use and organizational performance as well as a mediator. While marketing capability plays a role as a mediator between CRM technology use and performance as demonstrated in this paper, the strong conceptual underpinning of marketing capability as a moderator exists simultaneously. If firms possess different level of existing marketing capabilities, even firms utilizing similar level of CRM technology can achieve differential performance. Future research should place a special attention to examine the possibility as both a mediator and a moderator of marketing capability and also should make a stronger case for mediating role of marketing capability in the relationship between CRM and performance.

Finally, although we include two sub-dimensions of architectural marketing capability, namely marketing planning capability and marketing implementation capability, we did not examine the different mediating effect of the two sub-dimensions of marketing capability between CRM technology use and organizational performance. It would be interesting to find out which marketing capability is more strongly related to CRM technology use. It would be beneficial for future studies to investigate the differential effects of two types of marketing capabilities (i.e. specialized vs. architectural marketing capabilities) as well as the two sub-dimensions of architectural marketing capabilities.

6. Conclusions

In conclusion, it is hoped that this research contributes to both academics and business practitioners by improving our understanding of successful CRM implementation. By examining the holistic process by which CRM technology leads to organizational performance, this study specifically helps management to know what it should do in order to actualize CRM performance. It is evident that marketing capability plays a pivotal role in translating CRM technology into business outcomes. Additionally, in order to utilize CRM technology effectively, management should set up a customer-centric organizational culture and management system. Despite the progress and insights achieved, however, there remains a strong need for future research to build upon these findings and further expand our understanding of this important research topic. It is believed that such research will offer meaningful implications for research and practice alike.

Appendix A. Final measurement items

CRM technology use (Jayachandran et al., 2005)

Indicate your agreement with each of the following statements with respect to the CRM system of your company.

Sales support (5 items)

- provides sales force with customer information
- provides sales force with competitor information
- provides sales force with leads for cross sell/up sell opportunities
- tracks product availability
- provides customized offers to sales people

Service support (3 items)

- allows customer support personnel to access data on customer interactions

- provides customers access to a knowledge base of solutions to FAQ
- tracks service delivery

Analysis support (5 items)

- forecasts customer preferences
- measures customer loyalty
- calculates customer life time value
- calculates customer retention rates
- assesses product profitability

Data integration and access support (3 items)

- combines customer transaction data with external source data
- integrates customer information from different contact points (e.g., mail, telephone, web, fax)
- allows relevant employees access to unified consumer data

Marketing capability (Morgan et al., 2003; Vorhies and Morgan, 2005)

Indicate your agreement with each of the following statements with respect to the marketing capability of your company relative to major competitor.

Marketing planning capability (5 items)

- superior marketing planning skills
- sets clear marketing goals
- develops creative marketing strategies
- segments and targets market effectively
- thorough marketing planning process

Marketing implementation capability (4 items)

- allocates marketing resources effectively
- delivers marketing programs effectively
- translates marketing strategies into action effectively
- executes marketing strategies quickly

Organizational performance (Vorhies and Morgan, 2005)

Indicate your agreement with each of the following statements with respect to the performance of your company relative to major competitor.

Market effectiveness (4 items)

- grows market share rapidly
- accomplishes rapid growth in sales revenue
- acquires more new customers
- increases more sales to existing customers

Market profitability (3 items)

- superior profitability
- superior return on investment (ROI)
- reaches financial goals well

Customer-centric organizational culture (Jayachandran et al., 2005)

Indicate your agreement with each of the following statements with respect to culture of your company.

- considers retaining customers to be a top priority
- encourages employees to focus on customer relationships
- considers customer relationships to be a valuable asset
- emphasizes the importance of customer relationships

Customer-centric management system (Jayachandran et al., 2005)

Indicate your agreement with each of the following statements with respect to the management system of your company.

- provides employees with incentives based on customer satisfaction measures
- evaluates our customer contact employees based on the quality of their customer relationships
- provides education program for employees to enhance the quality of customer interactions

Appendix B. Covariance matrix of indicators

	sas	ses	as	di	oc1	oc2	oc3	oc4	ms1	ms2	ms3	mc1	mc2	me	mp
sas	1.791														
ses	0.959	1.631													
as	1.259	1.156	1.990												
di	1.248	1.225	1.319	2.021											
oc1	0.612	0.582	0.668	0.564	1.511										
oc2	0.587	0.665	0.619	0.601	0.987	1.501									
oc3	0.494	0.564	0.634	0.550	0.948	0.914	1.392								
oc4	0.655	0.495	0.664	0.562	0.843	0.804	0.985	1.369							
ms1	0.941	0.665	0.657	0.795	0.583	0.674	0.575	0.666	2.462						
ms2	1.129	0.814	0.871	1.211	0.720	0.797	0.607	0.686	1.578	2.525					
ms3	0.767	0.727	0.828	1.035	0.646	0.665	0.615	0.645	1.087	1.390	1.883				
mc1	0.707	0.585	0.739	0.702	0.718	0.616	0.759	0.759	0.819	0.882	0.882	1.399			
mc2	0.760	0.657	0.715	0.784	0.749	0.700	0.716	0.704	0.926	0.994	0.914	1.261	1.462		
me	0.541	0.512	0.545	0.458	0.471	0.413	0.492	0.415	0.502	0.574	0.492	0.829	0.859	1.234	
mp	0.488	0.512	0.433	0.479	0.371	0.393	0.454	0.380	0.525	0.675	0.444	0.845	0.848	0.913	1.533

sas: sales support; ses: service support; as: analysis support; di: data integration; oc1–oc4: customer-centric organizational culture; ms1–ms3: customer-centric management system; me: market effectiveness; mp: market profitability; sample size = 209.

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