

The Business Value of CRM Systems: A Resource-Based Perspective

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Abstract

Drawing upon the resource-based view and the process-oriented view, we develop a conceptual model to examine the business value of customer relationship management (CRM) systems, using a dataset of 150 U.S. banking firms. The results show that: (1) CRM resources improve firm performance mainly through creating strategic benefits (e.g. increased customer retention, improved product and service), although there are significant operational benefits (e.g. efficiency gains and cost reduction in customer-oriented business processes); (2) in different competitive environments, the same resources play different roles in creating strategic benefits: technological resources have a weaker impact on strategic benefits in more competitive environments, while organizational alignment has a stronger impact in such environments; (3) operational benefits tend to be “competed away”, while strategic benefits sustain to generate performance advantage in spite of competition. These findings provide important implications for understanding how CRM value is shaped by various resources in competitive environments.

1. Introduction

As the competition for customers intensifies, firms are striving to improve their interactions with customers by investing in customer relationship management systems [36]. *Customer relationship management* (CRM) systems are enterprise applications that manage business interactions with customers through integrating customer-oriented business processes, including marketing, sales, and customer services [13, 19]. Firms use CRM systems not only to automate customer-oriented business processes to reduce costs, but also to collect and analyze customer data to better fulfill customer needs and improve customer satisfaction, leading to increased selling opportunities [19]. Although firms are boosting their CRM investments, it remains unclear whether

such investments can generate significant business payoffs [36]. In fact, firms have seen vastly different outcomes of CRM investments [37].

Firms such as First American Corporation (FAC) and Harrah’s Entertainment have been successful in leveraging CRM systems to improve their customer understanding, product/service quality, cost efficiency, and thus profitability [14]. Some other firms, however, have failed to derive business value from their million-dollar CRM initiatives, partly due to the difficulty in managing organizational changes required by CRM implementation [36]. A survey of more than 1,500 firms finds that 41% of the firms with CRM projects were either experiencing significant difficulties or close to failure [42].

Further, existence of efficient markets for CRM systems casts doubt on the extent to which CRM systems can indeed serve as a source of performance advantage, especially when intensified competition and imitation are present [31]. On the one hand, intensified competition makes it more difficult for firms to derive and retain value from CRM technology *per se* due to its commoditization and competitors’ imitation [31]; on the other hand, firms in highly competitive environments such as FAC and Harrah’s are able to leverage CRM systems to enhance customer satisfaction and improve product and offering, and thus achieve superior firm performance [14]. This suggests that firms in competitive environments can develop distinctive, CRM-enabled resources to gain performance advantage. Therefore, competition may significantly affect how firms derive business value from CRM systems.

CRM practice has provided mixed evidence on the business value of CRM, calling for research on this important issue [25, 39]. Two studies have empirically found that CRM use significantly increases customer satisfaction and retention [25, 18]. However, evidence on the performance effects of CRM tends to be mixed.

Aral et al. [1] found that CRM go-live events are significantly associated with productivity and profitability improvements based on a dataset of 623 firms. Another study by Hendricks et al. [16] analyzed 80 companies that announced CRM implementations, but found no significant effects of CRM on profitability or stock returns. Therefore, it is important to further investigate the business value of CRM through large-scale empirical analysis.

Motivated by the above considerations, our study focuses on three key research questions: (1) Does CRM create business value in terms of business process and firm performance improvement? (2) What are the key factors driving CRM value? (3) How does competition affect the business value of CRM? To better understand these issues, we draw upon the resource-based view (RBV) for theoretical guidance.

2. The resource-based view on IT value

Rooted in the strategic management literature, the *resource-based view* (RBV) attributes differences in firm performance to distinctive resources and resource combinations that are valuable, firm specific, and difficult to imitate [3, 28]. To understand IT-related resources and firm performance, information systems (IS) researchers have applied the RBV to analyze the business value of IT [44, 24]. It has been noted that firm performance depends on the *combination* of technologies and organizational support in IT management. Brynjolfsson et al. [9] suggested that intangible assets, especially managerial capability and organizational capital, are complementary to IT resources and can enhance IT's capability of creating value at the firm level. Other studies have shown that firms can achieve competitive advantage only when they combine IT with business and human resources [32], whereas IT *per se* is unlikely to provide an advantage to firms due to imitation by competitors [23, 8]. Although specific resources vary among previous studies, there is a consensus that IT business value stems mainly from "fitting the pieces together" [12]. Thus, our review of the literature leads us to believe that the combination of *technological resources* and *complementary resources* is a promising path to CRM value creation.

Using the RBV to study the business value of IT, researchers have attempted to develop a typology of IT-related resources. For example, Melville et al. [24] suggested two types of IT-related resources that may contribute to firm performance: (a) IT resources, which include physical resources (such as IT infrastructure and enterprise systems) and human resources (such as

technical skills), and (b) complementary organizational resources (such as organizational alignment in business processes and strategies). This classification is consistent with the prior literature [32, 8]. Extending this line of inquiry, our study covers both categories and investigates specific resources related to CRM value creation.

3. The process-oriented view

The process-oriented view suggests that the first-order impacts of IT investment take place at the business process level [5, 27]. It posits that IT creates business value for the organization by improving various business processes. Consequently, greater impacts of IT on firm-level performance would result from the higher capability of IT to achieve process-level benefits. These process-level benefits include operational benefits (e.g. cost reduction and improved internal efficiency) and strategic benefits (e.g. improved product/service and an enriched understanding of customers and suppliers) [27, 41]. Applying this process-oriented view, researchers have empirically confirmed the business value of IT at the process level, supporting that IT improves firm performance through enhancing business processes [5, 34, 46]. Extending this to the CRM context, CRM-related resources would first generate process-level operational and strategic benefits, and consequently firm-level performance improvements.

4. Extending the theories to CRM contexts

According to the RBV, firms' performance improvement from IT depends on the development of unique technological capabilities and skills along with complementary resources within the organization. Specifically, CRM technology can enhance firm performance through improving customer-oriented business processes such as marketing, sales and service [18, 19]. By acquiring and analyzing customer data, CRM systems allow firms to combine all customer touch points into one integrated seamless interaction, analyze customer value and needs strategically, market products or services to customers who mostly need them, and improve customer satisfaction and retention [25, 18]. Accordingly, a CRM system consists of multiple modules including: *operational CRM*, which supports a variety of customer-oriented business processes in marketing, sales and service operations; *analytical CRM*, which analyzes customer data and transaction patterns to improve customer relationships; and *collaborative CRM*, which enables the organization to work closely with selected customers and business partners through integrating CRM system

with internal enterprise systems and front-end web systems [19, 13]. Operational and analytical CRM modules provide the major functions of a CRM system. Further, leveraging these CRM modules requires both IT and business managers to have sufficient technical skills for carrying out CRM-enhanced business operations [14].

More importantly, successful CRM implementation often entails significant organizational transformation, due to the complexity of multiple business operations involved in handling customer relationship management [19]. Implementing a CRM system is only part of the needed change. To embrace the new ways of interacting with customers, firms need to align various organizational aspects with their CRM systems, including business processes, strategies, top management support, and employee training [14, 18]. These alignments must take place in conjunction with technological changes. However, developing capabilities in managing organizational alignment is difficult [23]. Lack of adequate organizational alignment tends to be the most important reason for CRM failures [36].

5. The conceptual model

Drawing upon the above theoretical considerations, we develop a conceptual model for studying CRM value as shown in Figure 1, which also incorporates the results to save space. Our conceptual model includes a set of CRM-related resources that may affect process and firm performance. Based on our earlier review of the typology of IT-related resources [24], we classify CRM-related resources into two types—*CRM technology* (*CRM functionality, system integration, and CRM skills*) and *complementary resources* (*organizational alignment*). Further, as we

seek to study how competition shapes the resource-performance relationships, we posit competition intensity as an environmental moderator.

5.1 Dependent variables

The dependent variables in our conceptual model are *impacts of CRM on process performance* (or *process performance* for short) and *impacts of CRM on firm performance* (or *firm performance* for short). As suggested by the process-oriented view, CRM systems generate first-order impacts on customer-oriented business processes, which in turn lead to second-order impacts on overall firm performance. Along this line, we conceptualize *process performance* as operational benefits and strategic benefits at the business process level generated by CRM-related resources [27, 41]. Operational benefits result from the cost efficiency of automated and streamlined business processes through CRM use, such as faster order fulfillment, increased productivity, decreased marketing and sales expenses, and improved efficiency of internal communication and coordination [27]. Strategic benefits stem from firms’ leverage of CRM-enabled business opportunities to enrich their understanding of customers and markets, and thus strengthen customer relationships. Such benefits include enhanced customer retention rate, product and service improvement, and increased sales forecasting accuracy, which are all based on an enriched understanding of customers [41, 27].

We conceptualize *firm performance* as CRM-enhanced firm-level improvement which includes two dimensions—financial performance and competitive advantage. Financial performance reflects firm performance with objective accounting measures, including net profit margin, return on assets/equity/investment, and sales growth [8]. Competitive advantage reflects firms’ relative performance in competition, with such measures as market share, competitive position, and relative profitability [41]. Considering the close relationship between financial performance and competitive advantage [30], we use these two dimensions to jointly capture the

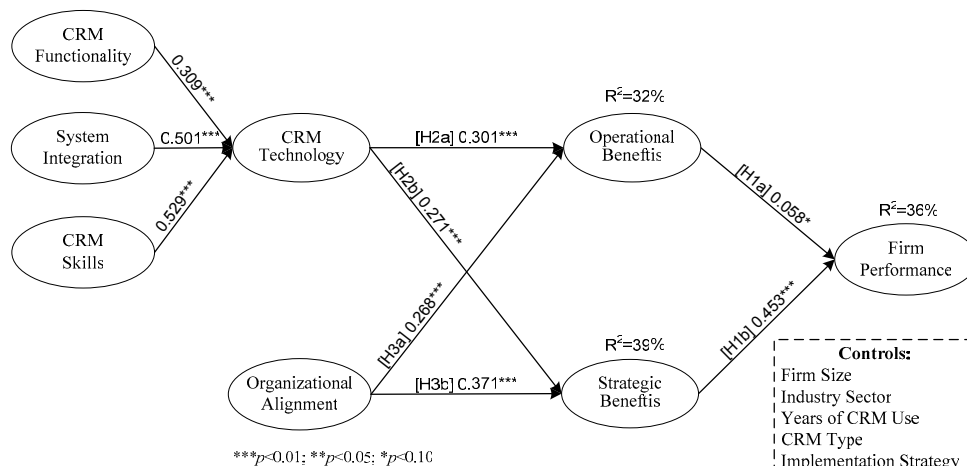


Figure 1. Empirical Results on the Full Sample (N=150)

impacts of CRM-related resources on firm performance. Our earlier discussion reveals that CRM systems enhance firm performance through creating operational and strategic benefits in various customer-oriented business processes, such as marketing, sales, and customer service [18, 25]. Therefore:

H1a: *Firms with greater CRM operational benefits will achieve greater firm performance.*

H1b: *Firms with greater CRM strategic benefits will achieve greater firm performance.*

5.2 Independent variables

CRM technology refers to CRM-related technological resources including three dimensions: CRM functionality, system integration, and CRM skills. *CRM functionality* refers to the key operational and analytical functions that CRM systems offer to enhance customer-oriented business processes across multiple business units (e.g. marketing, sales, and customer service) [15]. CRM functionality thus reflects the technological capability of CRM systems to satisfy organizational needs for managing customer relationships [21]. A review of the literature and major vendors' CRM products (e.g. Oracle-Siebel, SAP, and Oracle-Peoplesoft) reveals that four major modules are most common—marketing, sales, service, and analytical modules [15, 36].

The *marketing module* provide functions to support marketing operations based on customer information collected, including customer targeting, pricing, and marketing campaign management. The *sales module* supports sales operations such as account management, sales lead management, and customized sales recommendations for cross-selling and up-selling. The *service module* facilitates customer service operations, customer data management, call center operations, and service knowledge database maintenance. These three operational modules interact with the operational database to store and extract data. The operational database interacts with the data warehouse to provide data input for the analytical CRM module, and extract analysis results to support operational CRM modules. The *analytical CRM module* conducts a variety of analyses based on customer data, including customer value analysis, customer retention rate analysis, and sales forecasting. Outputs of these analyses are used to identify the most valuable customers for targeted marketing and cross-selling, understand customer needs and preferences, and improve product offering and service quality. Together, the four modules provide the major functions to automate customer-oriented business processes, and

thus improve the efficiency and effectiveness of such processes.

In addition to leveraging operational and analytical CRM functions, firms use CRM systems to realize *collaborative* interactions with customers and business partners through *system integration*. *System integration* links CRM systems with back-office enterprise systems (such as enterprise resource planning (ERP) and legacy systems) and web-based e-business applications via Internet-based communication protocols, and further connects these systems with those of suppliers and customers based on common data standards [33]. Firms can thus build an integrated platform to synchronize customer information flow, improve coordination, facilitate transactions, and improve customer relationships [14], all of which are important dimensions of value creation.

CRM skills refer to the technical skills of using CRM technology to improve customer-oriented business processes [23]. Both IT and business managers need to have the necessary technical skills and know-how to manage and use CRM systems [24]. According to the resource-based view, such technical skills are an important determinant of business value [8]. Without sufficient technical knowledge and capability, it would be difficult for managers to understand and use the complex operational and analytical functions provided by CRM systems, which may raise significant user resistance to CRM use [13].

H2a: *CRM technology will be positively related to operational benefits.*

H2b: *CRM technology will be positively related to strategic benefits.*

Organizational alignment refers to the adaptive organizational transformation in adjusting business strategies and processes, providing management support, and training and motivating employees to use CRM [14]. It has been emphasized in the literature that technology resources need to be aligned with various aspects of the organization [9]. Organizational alignment enable firms to make needed changes on business processes to accommodate CRM use, align CRM technology with business strategies and mindsets, and cultivate employees' commitment to CRM initiatives [36]. Not all firms can effectively manage the changes associated with CRM systems, due to the complexity in supporting new CRM-enabled processes with a changing technical architecture and the extensive changes in job skills [14]. The cross-department coordination for change management is often intense, partly due to the changes in strategies and processes [10]. Further, CRM interacts with a

firm's customers, a large group with diverse needs; therefore, customer-oriented business processes are less standardized across customer segments, increasing the complexity of organizational configuration [13].

H3a: *Organizational alignment will be positively related to operational benefits.*

H3b: *Organizational alignment will be positively related to strategic benefits.*

6. The role of competition

6.1 Moderation effect on the value of resources

Competition plays a significant role in the process of CRM value creation. First, the relationships between resources and firm performance may be shaped by competition [2]. That is, the same resources may have differential effects on firm performance in different competitive environments. For firms in highly competitive environments, resources that are readily available, easy to imitate, or substitutable would be more of competitive parity due to imitation by competitors [2, 31]. Although these resources would still generate operational benefits such as cost-efficiency gains *within* the firm itself, they would be less valuable for creating strategic benefits (such as customer retention, customer satisfaction with product and service, and sales forecasting) which are affected by *competitors'* performance. The reason is that, strategic benefits result from firms' leverage of CRM resources to enhance the relationships with *customers*; therefore the creation of strategic value is not only determined by firms' own effort, but also contingent upon *competitors'* influence on customers. Because intensive competition would stimulate competitors to acquire customers through developing CRM resources, those easy-to-imitate resources would increasingly become competitive parity and thus lead to less strategic gains over competitors. In contrast, resources that are firm specific, difficult to imitate, and non-substitutable would still be important for gaining a competitive edge through creating strategic benefits when competition intensity is high [4].

In our model, *CRM technology* is more vulnerable to competitive imitation, due to the existence of efficient markets for CRM hardware, software packages, consulting services, and training services provided by CRM vendors and consulting firms. From the RBV perspective, these resources would therefore be less valuable for creating strategic benefits in highly competitive environment [31]. In contrast, *organizational alignment* is firm specific and difficult to imitate, as it is embedded within business processes and tightly integrated with the resource base of the

organization [6]. Broadly speaking, customer relationship management is more of a customer-centric philosophy, rather than mere technology [36]. From the marketing perspective, CRM is viewed as a business philosophy that emphasizes developing a long-term intimate relationship with customers to serve them better [7]. CRM initiatives should aim at embracing this customer-centric philosophy by aligning organization with CRM technology and thus adapting to customer needs more readily [35], especially in highly competitive environments that breed severe battles for customers. Customers are important assets for firms; therefore, firms need to bring customer orientation deeper into their culture, business processes, and job skills of employees [36]. Unlike the standardized hardware/software packages and services in CRM markets, organizational alignment is tailored to the firm's specific context that is not transparent to competitors. It is thus unlikely to be imitated or acquired through trade, and thus has few strategic substitutes [44]. Therefore, organizational alignment would remain to be important for creating strategic benefits in highly competitive environment. On the other hand, CRM technology and organizational alignment would still generate operational gains, which, nonetheless, would not serve as competitive advantage for firms due to competitive imitation (as will be discussed in the following section). This discussion leads to the following hypotheses:

H4a: *The link from CRM technology to strategic benefits will be weaker when competition intensity is high.*

H4b: *The link from organizational alignment to strategic benefits will not be weaker when competition intensity is high.*

H4c: *The links from CRM technology and organizational alignment to operational benefits will not change significantly with respect to competition intensity.*

6.2 Moderation effect on value transformation

Competition may shape the degree to which process gains from IT deployment are passed on to customers. Especially, efficiency gains may be "competed away" when competition intensity is high. This is because competitive imitation of IT innovations would enable competitors to earn comparable operational benefits (such as cost reduction and efficiency gains); therefore, such operational gains would only serve as competitive parity and lead to no profitability gains or competitive advantage [24]. In the IS literature, researchers have found that firms' investments in IT have a significant relationship with

operational gains (such as productivity improvement and efficiency gains) and consumer surplus, but not with profitability [17, 5]. This empirical evidence seems to suggest that efficiency gains may be “competed away” and passed on to consumers without profitability gains for firms [17]. Therefore, increased competition may restrain firms from gaining profitability improvement or competitive advantage from operational benefits of CRM. However, strategic benefits would still be important for achieving performance advantage in the face of competition, since such benefits result from firms’ leverage of unique CRM-related resources to create a competitive edge in satisfying and retaining customers. Hence:

H5a: The link from operational benefits to firm performance will be weaker when competition intensity is high.

H5b: The link from strategic benefits to firm performance will not change significantly with respect to competition intensity.

6.3 Controls

Data variation in firm performance can be better explained only if controls are appropriately applied. First, we need to control for firm size. As a surrogate measure to several dimensions of firm resources such as financial slack and IT experience [38], size might be a positive factor for value creation given the resource advantage; yet large size may also be a negative factor, as CRM implementation and value creation may be retarded by the complex organizational structure and hierarchical decision making that are typically associated with large firms [45]. We therefore control for firm size using the number of employees, log-transformed to reduce data variation [45]. Second, we use sector dummies to control for differences among banking sectors (at the 4-digit SIC level). Third, firms’ value creation from CRM is likely to be a learning-by-using process, which involves the accumulation of experience from trials and errors [23]. We thus use the temporal length of CRM use by firms to control for this learning effect. Fourth, firms may purchase a licensed CRM system from the CRM vendors, or develop their own in-house CRM system that is less standardized. We control for this difference using a dummy variable describing the type of CRM. Finally, as CRM include a variety of functions used by multiple business units, the implementation strategy is critical. It is argued that firms needs to take a module-by-module strategy to roll out the CRM project, rather than implement all modules at one time, to ensure success [37]. We therefore control for this difference in firms’ implementation strategy.

7. Data and measures

To test the proposed model and hypotheses, we conducted a survey. The sample was drawn from U.S. public companies in the banking industry (SIC 60), using the industry selection at Hoover’s, Inc (www.hoovers.com). Emphasis was placed on public companies in order to gain access to financial data through SEC reports from Compustat. The sample was stratified to include only those companies that use CRM systems for managing customers. Our final dataset includes 150 firms, with a 19% response rate which is comparable to other survey studies of a similar scale (e.g. [10]). We examined common method bias by using Harman’s one-factor test [29] and partial correlation procedures [22]. The results show no significant common method bias.

We used partial least squares (PLS) to conduct confirmatory factor analysis (CFA) to examine the constructs with multiple indicators. We chose PLS for two reasons. First, our measurement model includes both reflective and formative constructs; PLS, with its components-based algorithms, can handle both types of constructs [11]. Second, PLS algorithm requires relatively less strict assumptions about residual distributions, and therefore is considered to be more suited for early-stage research [11]. For *reflective constructs* (system integration, organizational alignment, operational benefits, strategic benefits, financial performance, competitive advantage), we examined construct reliability, convergent validity, and discriminant validity [40, 11]. All constructs have a composite reliability above the cutoff value of 0.7 [11]. All standardized path loadings are significant ($p < 0.01$) and above 0.7, suggesting good convergent validity [11]. In addition, all constructs have an average variance extracted (AVE) greater than 0.5, suggesting that sufficient variance is explained by the latent constructs [11]. The square root of AVE of each construct is greater than the off-diagonal correlations, indicating good discriminant validity [11]. For *formative constructs* (CRM functionality, CRM skills, and CRM technology), the weights of measurement items are statistically significant ($p < 0.01$) and above the suggested cutoff value of 0.3 [11]. In short, our measurement model satisfies various reliability and validity criteria.

8. Results

8.1 The full sample

We first estimated the structural model on the full sample (N=150) using PLS. The results are shown in

Figure 1. The R^2 of operational benefits and strategic benefits are 32% and 39% respectively. CRM technology and organizational alignment have a significant and positive path to both operational benefits and strategic benefits ($p<0.01$). Strategic benefits have a positive and significant path to firm performance ($p<0.01$), which has a R^2 of 36%; while operational benefits have a positive but weak path to firm performance ($p<0.10$). Hence, we find strong support for H1b, H2a, H2b, H3a and H3b, but weak support for H1a.

Among the control variables, we find that firm size has a negative impact on both operational and strategic benefits ($p<0.05$), and a positive impact on firm performance ($p<0.05$). This indicates that larger firms (associated with complex organizational structures and hierarchical decision making) are less likely to see process improvements [45], but are more likely to see firm performance improvements possibly due to their possession of slack resources [38]. Years of CRM use has a positive impact on operational benefits ($p<0.01$), strategic benefits ($p<0.01$), and firm performance ($p<0.05$), suggesting the significance of learning effect in CRM value creation. CRM Type has a negative impact on operational benefits ($p<0.10$) and a positive impact on both strategic benefits ($p<0.01$) and firm performance ($p<0.01$), suggesting that in-house developed CRM systems are better tuned to improve the efficiency of business operations, while licensed CRM systems are more capable of enhancing customer relationships and firm performance. Implementation strategy has a positive impact on operational benefits ($p<0.10$), strategic benefits ($p<0.10$), and firm performance ($p<0.01$), emphasizing the importance of rolling out the CRM project gradually.

8.2 Moderation of competition intensity

To examine the moderation effect of competition intensity (H4 and H5), we conducted a group analysis [20]. We use Herfindahl-Hirschman Index (HHI), a commonly accepted measure of market concentration, as a reverse measure of competition intensity [43]. We calculated the HHI

for each banking sector based on Compustat data. The U.S. Department of Justice [43] considers a market with HHI of less than 1,000 to be a competitive marketplace. Using this threshold, we split the full sample into two groups: firms facing high competition (HHI<1000) vs. low competition (HHI>1000).

We then fitted the structural model on the two groups respectively, and tested the differences between them by comparing each PLS path across the two groups. We used t-test to examine the statistical significance of the path difference [20]. As indicated by the results shown in Figure 2, CRM technology has a significantly weaker effect on strategic benefits in the high-competition group. Beyond our expectation, the link from organizational alignment to strategic benefits not only remains significant, but also becomes significantly stronger in the high-competition group. Thus, we found support for H4a and H4b. On the other hand, the links from CRM technology and organizational alignment to operational benefits do not differ significantly across the two groups, support H4c. In addition, operational benefits have an insignificant link to firm performance in the high-competition group but a significant and positive link to firm performance in the low-competition group; the difference is significant as shown by t-test, supporting H5a. In contrast, difference in the link from strategic benefits to firm performance appears to be insignificant between the two groups, supporting H5b.

9. Discussion

Drawing upon the RBV and the process-oriented view, this study seeks to study the business value of CRM systems. Along this line, this paper makes several contributions. First, our conceptual model helps to understand what CRM resources are important and how they work together to create business value for

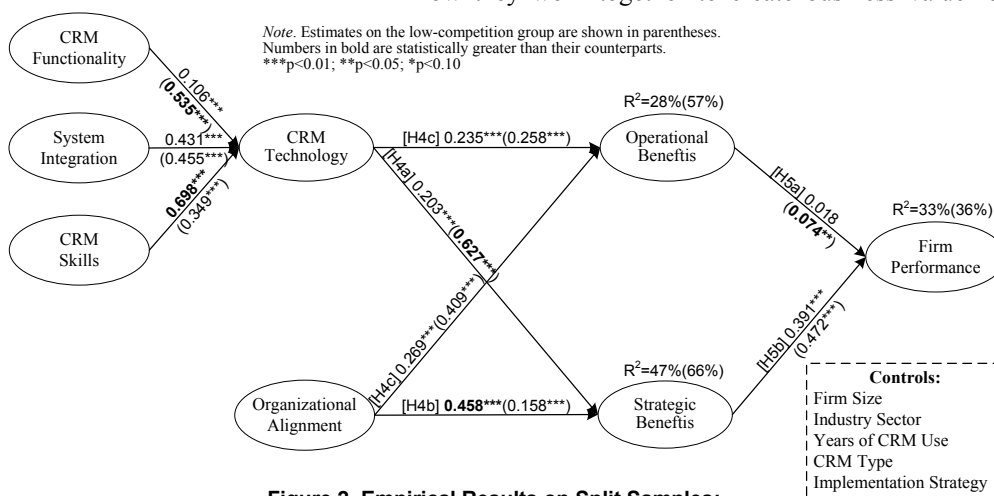


Figure 2. Empirical Results on Split Samples: High-Competition (HHI<1000) Group vs. Low-Competition (HHI>1000) Group (N=76 vs. 74)

firms. This study thus contributes to the literature on CRM systems, by adding both theoretical rationales underlying CRM value creation and empirical support to such rationales. We have identified significant drivers of CRM value, i.e. CRM technology (including CRM functionality, system integration, and CRM skills) and organizational alignment. The importance of these resources speaks to the nature of CRM systems, i.e., integrated customer-oriented business processes through organizational alignment with CRM technology. Customer relationship management is viewed broadly as a business philosophy emphasizing that firms embrace the customer-centric orientation through extensive organizational transformation, rather than merely getting the technology in place [18, 7]. Our results highlight the importance of both technological capabilities and organizational capabilities in deriving business value from CRM systems. This finding extends the current IS literature by confirming in the CRM context that IT business value comes from both technology and organizational capital [9, 12].

Second, we adopt the process-oriented view and calibrate our measures of CRM resources and impacts specifically to customer-oriented processes. This process-oriented approach is different from the traditional production-function approach that examines the direct effect of IT on overall firm performance [9]. Enabled by this process-oriented approach, we find that it is mainly through generating *strategic* benefits, rather than operational benefits, that CRM technology and the associated organizational alignment improves firm performance. Although CRM resources create significant operational benefits, such benefits only weakly contribute to performance advantage. In fact, this finding is not unique to CRM systems. Examining the business value of supply chain management (SCM) systems for suppliers, Subramani [41] finds that the link from operational benefits to competitive performance appears to be weak, while strategic benefits has a strong link with competitive performance. Consistently, we find that the link from CRM operational benefits to performance advantage is weak, possibly due to intensive competition among firms and thus customer appropriation of such efficiency gains [17, 34]. Our findings contribute new evidence to why IT does not always lead to improved overall firm performance, and thus help to reframe the conversation from direct relationships between IT and firm performance to intermediate operational and strategic impacts on business processes. More fundamentally, this result has an important implication for research on IT payoff in general. Information technology must be successfully used in firms'

business processes to enable *strategic* opportunities for firms, while operational gains may not lead to any significant competitive payoff. Thus, failing to achieve strategic benefits from IT use in business processes might be an explanation for insignificant performance impacts of IT. Our study thus sheds new light on the "*IT business value*" debate in the CRM context.

Third, extending the resource-based view, this study examines the moderation effect of *competition intensity* on the value of resources. We have found that the same resources have differential effects in generating strategic benefits in different competitive environments. Technology resources are less strategically valuable for firms in highly competitive environments, given the existence of efficient markets and thus the ease of imitation. In contrast, organizational alignment becomes more of strategic importance in such environments since it is firm specific, difficult to imitate or substitute [2, 8]. This finding suggests that the strategic value of resources in enhancing business processes can be better understood in light of certain resource attributes (i.e. specificity, imitability, and substitutability) that are closely tied to competition. IT value under competition has been recognized as an important yet understudied topic [44]. Our research applies the RBV to theorize the moderation effect of competition on CRM value creation. We also provide empirical evidence to support the theoretical rationale. In addition, the limited previous tests of IT value under competition mainly focused on the direct effect of competition on IT payoff [26]. This research used a different approach by considering the moderating role of competition. We have shown differential patterns of resource-performance linkages, which we believe bring new understanding to the IT business value literature. More broadly, competition intensity is an important environmental factor related to the market context within which firms operate. Such environmental factors deserve specific considerations when applying the resource-based theory [24]. Our study attempts to link the resource-based theory to the important environmental factors related to CRM value creation.

Lastly, we find that operational benefits tend to be "competed away" and lead to no performance advantage when competition intensity is high; in contrast, strategic benefits sustain to generate performance advantage in spite of competition intensity. This supports the assertion in the IS literature that efficiency gains from IT deployment may be "competed away" and passed on to customers because of competition [17, 24]. Further, it also explains why operational benefits only weakly contribute to firm

performance improvement in the full sample. Viewed from the technology diffusion perspective [38], firms in more competitive environments have greater incentives to adopt and imitate innovations for realizing efficiency gains. As a result, efficiency gains tend to become more of competitive parity among firms, and thus have less potential to generate profit gains and competitive advantage [24]. On the other hand, isolation from competition may help firms transfer such operational benefits into performance advantage. In contrast, strategic benefits serve as a source of performance advantage in spite of competition. This suggests that strategic use of unique CRM resources in business processes helps firms enhance customer relationships and discover new business opportunities, leading to significant performance advantage even in the face of competition. This study thus offers new implications in the CRM context on what type of IT business value survives competition.

10. Limitations and future research

The key limitations of this study are the following. First, the dataset used in this study is limited to the U.S. banking industry. Future research can test our theoretical model using a broader dataset across multiple industries in multiple countries. Second, due to the cross-sectional nature of our dataset, our results can only show associations existing between resources and firm performance, but not causality. A promising direction for future research would be to analyze the long-term sustainability of the relationships using longitudinal data and/or field studies. Lastly, the measures for operational and strategic benefits are based on survey responses from managers. Therefore, it would be helpful to use objective measures of process performance to cross-validate our findings.

11. Concluding remarks

In view of the intensified battle for customers, firms are increasingly using CRM systems to transform the way they manage customer-oriented business processes. This study attempts to present a theoretical viewpoint, supported by empirical evidence, on understanding the resources and value creation of CRM technology. Therefore, the major contribution of this study lies in its theoretical extension of the RBV to the value creation of CRM systems. By highlighting the strategic significance of such resources as organizational alignment together with CRM technology, our work suggests the critical role of a deeply absorbed customer-centric philosophy in creating strategic benefits and thus performance

advantage from CRM. This is especially important for firms in highly competitive environments where operational gains are “competed away”. We hope these initial results will motivate more research efforts in this important area.

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