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# Faculty & Research Working Paper

**Customer Relationship Management  
and Firm Performance**

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# Customer Relationship Management and Firm Performance

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## **Customer Relationship Management and Firm Performance**

### **Abstract**

In this paper, we examine the impact of customer relationship management (CRM) on firm performance using a hierarchical construct model. Using the resource-based view (RBV) of the firm, strategic CRM is conceptualized as an endogenously determined function of the organization's ability to harness and orchestrate lower order capabilities that comprise physical assets such as IT and organizational capabilities. The results reveal a positive and significant path between a superior CRM capability and firm performance. It is shown that CRM initiatives that jointly emphasize customer intimacy, cost reduction and analytic intelligence outperform those that take a less balanced approach. The results help to explain *why* CRM programs can be successful and what capabilities are required to support success.

Keywords: Customer Relationship Management, Strategic IT, Capabilities, Performance.

## INTRODUCTION

It is well established within the management information systems literature that a narrow concentration on information technology (IT) as a source of firm advantage and performance—as often assumed in the business press (Carr 2003)—is misleading (Piccoli and Ives 2005). Measurable returns from IT investment programs rarely arise from the technology alone, with the most successful programs combining technology with the effective organization of people and their skills (Bharadwaj 2000). It follows that the greater the knowledge about how firms successfully build and combine their technological and organizational capabilities, the greater will be our understanding of how IT influences performance.

From a practical and empirical perspective, there are important conceptual and analytic issues that must be addressed when we attempt to measure technological and organizational capabilities. One school of thought holds that a holistic representation is necessary when we examine complex phenomena such as IT (e.g., Swanson and Ramiller 1997). Others contend that such holistic representations are conceptually ambiguous, potentially confounding the relationship between performance and the various dimensions of IT (e.g., Barua et al. 1995; Sambamurthy 2001). These authors favor a more disaggregate line of empirical analysis as exemplified by Ray and Muhanna (2005, p. 626), who state that the “impact of IT should be assessed where the first-order effects are expected to be realized.”

The holistic/disaggregation debate presents a dilemma for IT researchers who want: (1) the breadth, comprehensiveness and generalizability of a multidimensional construct to better represent the interdependent nature of IT, and (2) the clarity and precision associated with an examination of the role of specific IT resources that underlie the construct. Edwards (2001) argues that the protagonists in this debate disagree over the degree of aggregation, a

fact that is best resolved empirically. For example, it is possible to combine higher order multidimensional constructs and their lower order dimensions within a single analytic framework. Unfortunately, such frameworks have received little attention in the IT literature to date (see Wetzels et al. 2009 for a recent exception). Equally, the appropriateness of different measurement models for the constructs in these frameworks is only just beginning to be discussed (Petter et al. 2007; Coltman et al. 2008).

Customer relationship management (CRM) represents a singularly good example of a firm-level capability that is underpinned by specific technological, organizational and human capabilities. CRM is based on a broad range of business practices, each of which can be regarded as a lower-level capability in itself. Payne and Frow (2005) list the following practices underpinning CRM: (1) the intelligent use of technology, data and analytic methods to acquire customer knowledge; (2) the transmission of this knowledge to those managers and employees making decisions about customers; (3) the use of this knowledge by managers and employees to select and target customers for marketing purposes; and (4) creating connections across departments to support collaboration and generate new customer value.

CRM is increasingly important to corporations as they continue to invest in technical assets to better manage their interactions and pre- and post-transactions with customers (Bohling et al. 2006). However, although the market for CRM software and support remains strong (Maoz et al. 2007), there is considerable skepticism on the part of business commentators and academics as to its ultimate value to the corporation and customers. Surveys of IT executives in the business press report that CRM is an overhyped technology (e.g. Bligh and Turk 2004) and some academics claim the concept is fundamentally flawed because most customers do not desire a relationship with a firm (Dowling 2002). Empirical studies examining the success of CRM technology have failed to alleviate this skepticism as investigations to date span a limited range of activities (Bohling and Klein 2006; Sutton and

Klein 2003) and are noticeably silent on the extent to which CRM investment contributes to firm performance (Boulding et al. 2005). Zablah et al. (2003, p. 116) argue that CRM research is neglected by decision makers and that “further efforts to address its mobilization and alignment are not only warranted but desperately needed.”

This discussion reveals two critical issues that are the focus of the current research. First, is there evidence that CRM matters? Put more empirically, does CRM contribute to higher firm performance based on standard measures understood by managers? Second, given that there is a CRM-performance relationship, what lower- and higher-order capabilities are critical to develop and maintain superior CRM? In other words, what is the structural capability path to improved performance?

In addressing these questions we make additional contributions to IT research and practice by resolving methodological issues that have previously limited our understanding of the relationship between IT, CRM and firm performance. First, we show that CRM is best conceptualized as a second-order or meta-capability. That is, CRM is an endogenously determined function of the firm’s ability to harness and orchestrate lower-order capabilities. Three lower-order capabilities provide the basis for our measure of a superior CRM capability. These are (1) IT infrastructure, (2) human knowledge and (3) business architecture. The first of these capabilities represents the technology, while the other two encapsulate the company’s organizational capabilities that complement the technology. Second, by accounting for the strategic objectives of the firm, we are able to address the fact that organizations are heterogeneous and will subsume their CRM activities within an overarching strategic imperative. We show that CRM investments can be understood better by accounting for the degree to which firms view CRM as a mechanism aimed at reducing customer management costs or increasing customer intimacy.

In terms of practice, the present study offers managers seeking to invest in CRM a fresh insight into what it means to be “IT savvy”. Weill and Aral (2006, p. 40) define this colloquial term as “the set of interlocking business practices and competencies that collectively derive superior value from IT investments.” Our results imply that CRM has the greatest impact on firm performance when IT resources are combined with organizational capabilities *and* the firm sets objectives for its CRM initiatives that jointly emphasize customer intimacy and cost reduction. In our particular sample of firms the organizational capabilities had more impact on superior CRM than the IT technology itself.

The paper is organized as follows. The next section outlines the theoretical background to our work and presents the research model and hypotheses. The ensuing section discusses the research methodology and presents the specific measures used to test our model. A section on data analysis and results precedes the final section, which lays out our main conclusions and the implications of this work for both scholarship and practice.

## **THEORETICAL BACKGROUND, RESEARCH MODEL AND HYPOTHESES**

Corporate unease with CRM technology investment is not unlike the disillusionment encountered with general IT investment in the late 1980s (e.g., Strassman 1997). The conceptual and analytic debate over the best way to specify and measure IT-related performance remains unresolved and to this day no consensus exists regarding the strategic value of IT (Oh and Pinsonneault 2007). This debate is, to a greater or lesser degree, being repeated with regard to CRM investment. Without clear and generalizable guidance as to the expected return from CRM investment, why do firms invest so heavily in it?

In this paper we use the resource-centered and contingency perspectives as the conceptual basis to investigate CRM performance. These perspectives dominate research in strategy and IT (Melville et al. 2004) and provide complementary understanding when evaluating the strategic value of IT (Oh and Pinsonneault 2007). Each is discussed in turn.

## **The Resource-Centered Perspective**

The resource-centered perspective can be divided into two streams: the production function view and the resource-based view (RBV). The production function view (Dewan and Min 1997) focuses on explaining variation in firm performance by reference to a collection of production resources (e.g., IT capital) and capabilities (e.g., labor). Although studies in this stream have reported positive relationships between the size of IT investment and organizational performance (e.g., Brynjolfsson and Hitt 1996), IT investment is generally regarded as a necessary but not sufficient factor in explaining organizational performance (Bharadwaj et al. 1999). In contrast, the RBV literature places greater emphasis on the identification of the different degrees and qualities of tangible and intangible resources. Put succinctly, the argument is that although a firm's competitive position is driven directly by its products and services, it is indirectly (and ultimately) driven by the resources and capabilities that go into their production (Newbert 2007).

The RBV is well suited to the assessment of IT investment because it emphasizes the possibilities and options that IT creates and, more importantly, the way firms make the best use of IT resources (Melville et al. 2004). Although aspects of IT can be ubiquitous, it is the combination of human skills and organizational context that is important to harness the full potential of IT. This combination of capabilities is not so evenly distributed between firms and has not been well developed in the theory (Wade and Hulland 2004).

Finally, the RBV of the firm implies that just because investment in IT resources and capabilities can improve the absolute operational performance of a particular process, this does not mean that investment in these capabilities will improve the competitive and financial performance of this process relative to the competition. This crucial point has not been well integrated theoretically by IT researchers, nor has it been incorporated in the measurement models used. For example, Bharadwaj (2000), Barua et al; (2004) and Ray et al. (2005) refer

to a superior IT capability but measure IT capabilities independently without reference to the firm's competitors. Yet as a firm's performance is largely determined by its strengths and weaknesses relative to its competitors, unless one or more of the firm's capabilities is superior to the competition, it is unlikely to achieve better performance. For this reason we measure capabilities relative to competitors in what follows.

### **The Contingency-Based Perspective**

Researchers in IT acknowledge that despite considerable investigation, the nature of the complex relationship between IT and organization context remains only partially understood (Oh and Pinsonneault 2007). “[C]ontext matters in MIS research” (Carte and Russel 2003, p. 480) and contingency theory posits that the internal alignment of strategy and organizational capabilities leads to superior organizational performance.

Contingency theorists have devoted considerable effort to studying the link between IT, business strategy and firm performance. This work has shown that investments in IT are frequently designed to serve different strategic objectives, with some firms targeting efficiency gains through cost reduction while others target sales growth through customer satisfaction and retention strategies (Ross and Beath 2002). The empirical evidence, however, remains mixed as to which strategy is the better option (Mittal et al. 2005). It follows that failure to account for strategic heterogeneity will weaken our ability to predict the investment-to-performance link. In the case of CRM, two specific and potentially independent strategic orientations are relevant. First, the firm may be seeking to build and enhance longer-term customer relationships, independent of the cost of doing so. Second, the firm may be attempting to be more cost efficient in maintaining these relations, whether through better data collection and analysis, automation of customer-facing processes or the targeting of marketing campaigns.

### **Conceptual Model of CRM Performance**

Our conceptual model combines lower- and meta-capabilities to explain hierarchically how CRM contributes to firm performance (see Figure 1). A general consensus regarding what constitutes lower-order CRM capabilities has begun to emerge in the strategy, IT and marketing literatures. For example, in a study of Chaparral Steel Corporation, Leonard (1998) found four distinct clusters of core technological capabilities: technical systems, human skills, managerial systems, and values. Tippins and Sohi (2003) provide a consistent definition of IT competency as the body of technical knowledge about IT systems, the extent to which the firm uses IT, and the number of IT-related artifacts. In marketing, CRM capabilities have been defined based on: employee values, behaviors and mindsets; customer information availability, quality and depth; and the supporting organizational structures, incentives and controls (Day 2003).

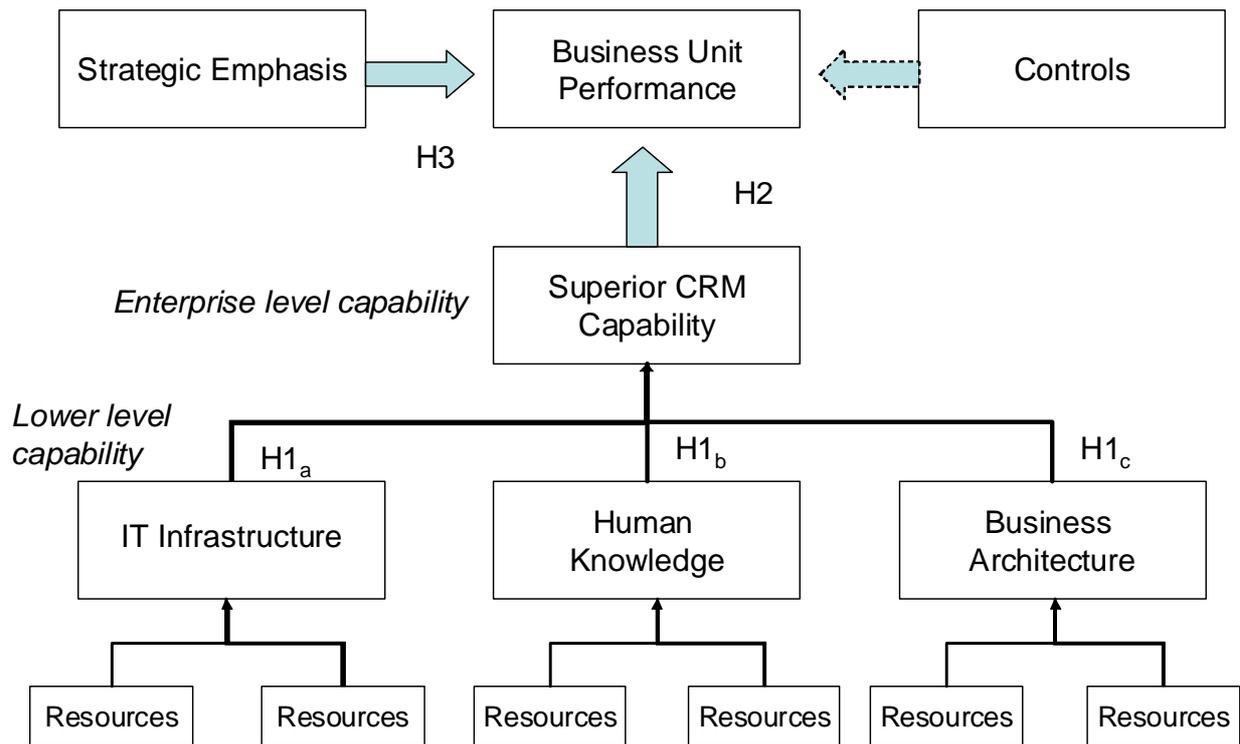
We conceptualize the foundations of CRM in terms of three lower-order capabilities. The first is *IT technology and infrastructure capabilities*, representing the CRM technology that underpins the availability, quality and depth of customer information. The second is *human knowledge-based capabilities* comprising the diverse skills and experience of employees that are necessary to interpret CRM data effectively. The third is the *business architecture and structural capabilities* that embody action in the form of incentives and controls for employee behavior that supports CRM. This conceptualization is similar to prior definitions of CRM in the marketing literature (e.g., Day 2003) and complements work in IT that emphasizes this level of analysis (e.g., Ray et al. 2005). For brevity, these capabilities will be referred to as *IT infrastructure (IT)*, *human knowledge (HK)* and *business architecture (BA)*.

Additionally, our model identifies a higher-order construct or meta-capability, *superior CRM capability*. This measures the contribution of each of the three lower-level capabilities (IT, HK and BA) relative to the competition, whilst also combining the three into one overall

construct in an empirically weighted manner. This construct parallels the way firms combine diverse resources to form lower-level capabilities, which are, in turn, combined and managed in the organization's overall capability to execute CRM. It is the extent to which this meta-capability is superior to that of competitors that will influence firm performance, *ceteris paribus*.

Studies of IT value have also reported mixed results when investigating the question of whether firms are better off pursuing a strategic emphasis based on revenue growth, cost reduction, or both (e.g., Mittal et al. 2005). The particular CRM strategic emphasis is germane to this study because CRM programs can focus on customer intimacy (i.e., relationship orientation, catering to individual customer service requirements, etc.), cost reduction, data analytics or a mix of all three (Buttle 2004). The type of strategic emphasis is included in our conceptual model as we expect it to influence overall performance. Finally, since firm performance is influenced by many other factors than CRM capability, we include standard control variables to account for these. These controls reduce the likelihood that we are attributing firm performance to superior CRM when in fact it is due to some other factor.

**Figure 1 – Model of CRM Performance**



## Development of Hypotheses

### IT Infrastructure

Rapid advances in hardware and software provide firms with a wide range of solutions designed to support CRM (e.g., SAP's CRM suite, Teradata's Enterprise Data Warehouse, etc.). The key components are the front office applications that support sales, marketing and service, a data repository that supports collection of customer data, and back office applications that help integrate and analyze the data (Greenberg 2001).

The capability to draw information from all customer touch-points—including websites, telesales, service departments, direct sales forces and channel partners—to build a coherent picture of the customer is costly for firms to imitate and, in many cases, highly idiosyncratic to the firm. To the extent that IT systems must span the firm's business functions and hierarchical levels (Grant 1996) or become an essential part of the firm's knowledge base (Kogut and Zander 1992), they become embedded in the firm as a competitive capability.

This can lead to a level of causal ambiguity and structural complexity that competitors find hard to imitate, thereby enhancing the firm's potential for sustainable competitive advantage (Dierickx et al. 1989). Indeed, empirical evidence suggests that performance improvements derive not from IT expenditure alone but when firms use IT to support customer service processes (Ray et al. 2005). Where IT infrastructure includes both hardware and software, this line of reasoning allows us to hypothesize that:

*H<sub>1a</sub>: Highly developed IT infrastructure (IT) is required to build a CRM capability that is superior to competitors.*

### **Human Knowledge**

In the case of CRM, it is unreasonable to expect that an IT capability alone is sufficient. Customer data need to be interpreted correctly within the context of the business, informing the decision-making process sufficiently that good decisions emerge. In this respect, the skills and know-how that employees possess in converting data to customer knowledge is also crucial to success. For example, managers must increasingly cope with vast amounts of rapidly changing and often conflicting market information. While analytic algorithms and data mining techniques can assist this, making sense of such data often requires human judgment.

Viewed from the RBV, this human capability: (1) enables companies to manage the technical and business risks associated with their investment in CRM programs (Bharadwaj 2000), (2) is based on accumulated experience that takes time to develop (Katz 1974), and (3) results from socially complex processes that require investment in a cycle of learning and knowledge codification. This makes it difficult for competitors to know which aspects of a rival's know-how and/or interpersonal relationships make them effective (Mata et al. 1995). Although it may be possible for competitors to develop similar skills and experience, it takes considerable time for these capabilities to mature (Lado and Wilson 1994).

Building on the RBV's notions of value, rarity and inimitability, the knowledge-based view (Grant 1996) emphasizes that humans with unique abilities to convert data into wisdom can create competitive advantages that enhance firm performance. In the context of customer relationships, such knowledge may include the experience and skills of employees, the models they develop to analyze data, procedures and policies they derive to manage these relationships, and so forth. Overall, the knowledge-based view allows us to derive the following hypothesis:

*H<sub>1b</sub>: Highly developed human knowledge (HK) in converting data to customer knowledge is necessary to build a CRM capability that is superior to competitors.*

### **Business Architecture**

Simply possessing valuable, rare, inimitable capabilities based on sophisticated CRM systems and gaining insight through complex human skills and experience will have little impact on the business unless action is taken. In other words, to improve performance the outputs of any CRM program have to be deployed at scale across the business. Many firms will own the same basic technology and possess similar skills. However, few will possess the organizational architecture of control systems and incentive policies required to fully exploit these resources (Barney and Mackey 2005). This ability to exploit investment in CRM is observed in an overall business architecture that supports action before, during, and after implementation. It not only ensures that customer knowledge is effectively generated, but more importantly, it ensures that the information is used within the organization to influence competitive advantage. For example, front-line employees are motivated to act on reports generated by the CRM system when making tactical decisions about customers. In the context of CRM, other aspects of this architecture could include training in systems and policies, or control systems that focus on a relationship rather than a transactional view of the customer. Following this line of reasoning we hypothesize that:

*H<sub>1c</sub>: Highly developed customer-oriented business architecture (BA) is necessary to build a CRM capability that is superior to competitors.*

### **The Effect of a Higher-Order CRM Capability on Performance**

There is a temptation to be normative about the pursuit of competitive advantage by directing attention and resources to each of these lower-level CRM capabilities. However, well-developed IT, HK and BA capabilities in isolation are insufficient to generate competitive superiority. Indeed, they confer competitive advantage only to the extent that the managers of the firm can leverage their interrelationships and produce a combination that is superior to that of their competitors (Wade and Hulland 2004). Amit and Schoemaker (1993) define such second-order or meta-capabilities as the firm's overall ability to efficiently combine a number of resources that engage in productive activity. In other words, the lower-order capabilities such as IT, HK and BA are necessary, but not sufficient, to improve firm performance relative to competitors. Accordingly, we hypothesize that:

*H<sub>2</sub>: High performing organizations are characterized by a superior combination of IT, HK and BA, resulting in a superior meta-capability of CRM.*

### **The Role of Strategic Emphasis in CRM**

Context matters in IT research, and IT investments have been shown to influence both revenue growth and cost reduction. Investments in IT facilitate revenue growth through: (1) new value propositions, (2) new channels to the customer, and (3) better management of customer segments. It has also been shown that IT can help firms to reduce operational, transactional and marketing costs. In some cases, empirical evidence suggests that firms that focus on either cost reduction or revenue growth outperform those that focus on both. In other cases, empirical evidence indicates that firms are better off when a dual emphasis is deployed (Mittal et al. 2005).

As noted earlier, firms see CRM as part of a revenue enhancement strategy, part of a cost reduction strategy, or some combination of the two (Payne and Frow 2005). Iriana and Buttle (2006) suggest that there are three basic approaches to CRM: (1) a top down strategy of customer intimacy to support relationship building through more individualized offers; (2) automation of customer-facing processes to capture cost savings; and (3) a bottom up approach that focuses on the analysis of data to enhance customer understanding, enable appropriate cross-selling attempts or the better targeting of offers, and so forth. They label these three approaches: *strategic*, *operational* and *analytic* CRM. It is equally plausible that firms pursue some combination of strategic, operational and analytic CRM to achieve their goals. Such combinations, being reliant on different lower-order capabilities, may also be difficult to imitate, and thus also a source of competitive advantage.

It is important, therefore, to distinguish between the effects on performance due to the CRM meta-capability and those due to the firm's strategic emphasis. Further, it is notable that strategic CRM places greater emphasis on customer value through relationship building and service customization in order to enhance revenues. Operational CRM has a clear focus on costs. Although analytic CRM can enhance revenues, it typically fits more into the cost reduction approach. This is because its main emphasis is on replacing a mass approach to marketing with more targeted, and thus less costly, campaigns. Increasing revenues while lowering costs would clearly have the biggest impact on firm profitability. Accordingly, and building on Mittal et al. (2005), we hypothesize that:

*H<sub>3</sub>: A dual strategic emphasis on enhancing revenue while reducing costs will have the greatest positive effect on firm performance, and this effect will be distinct from that of CRM capability.*

## **RESEARCH METHOD AND MEASURES**

### **Sample Characteristics, Unit of Analysis and Data Collection**

We tested our hypotheses on a cross-sectional sample of business-to-consumer firms based in Australia. The consumer markets selected shared some common features in their application of CRM technology (i.e., they are moderate to heavy users), size of customer base (i.e., they have a large customer base) and exposure to market pressures to differentiate them from the competition. Based upon these criteria, a sample of financial services, airlines, direct insurers, telecommunication utilities, hotels and casinos, and retail companies were chosen. Prior reports had shown that these industries displayed a strong commitment to CRM through high penetration of senior CRM appointments, loyalty programs and database marketing managers (MarketingUK 2003).

We identified a competent key informant as: a marketing or sales director, chief information officer, chief financial officer, or management executive typically at the general manager level in a strategic business unit (SBU). In addition to being well-informed on CRM initiatives, such informants are also able to compare their own unit to direct competitors. This is important in order to be able to identify both superior capabilities and performance. Furthermore, the business unit, rather than the firm, is the appropriate unit of analysis because the way CRM is implemented in one unit of a firm can differ from another. For example, CRM in Corporate and Institutional Banking will be different from CRM in Retail Banking.

Respondents were randomly sourced from a commercial contact list. Ninety-seven executives responded to our survey questionnaire, yielding a 21% response rate. Eliminating responses with missing data, firms without CRM programs, and one government organization identified as an outlier in standard tests, left 86 respondents across 50 organizations with significant CRM programs. These organizations were primarily traditional users of CRM;

half were in banking and insurance (25 firms), followed by IT products and services (6 firms), the hotel and travel industry (5 firms), telecommunications (4 firms), and various other service industries (10 firms). One business unit responded from each firm, with follow-up calls indicating that this unit was the most involved in CRM within the firm. The median business unit in our data had 160 employees and the average unit 1,440. As our concern was with differential CRM performance within firms operating on a competitive scale, our sample distribution was skewed towards those firms using CRM extensively and was not meant to be representative of all firms.

Research has found that multiple informants from the same business unit will, when averaged and weighted appropriately, yield response data that are superior to single informant reports (Van Bruggen et al. 2002). Our survey collected multiple responses from each business unit, with a mode of two and maximum of four key informants. Averaging the responses of each business unit's informants provides a better estimate of that business unit's true response. Weighting the data according to how many informants answered for each unit then increases the robustness of analyses by favoring business units with more informants over those with less. Practically, this is achieved by replacing each row (informant) in the analysis database with a row containing the mean values for that business unit on the relevant questions. Thus, for example, a business unit with three informants would appear as three identical rows in the database. This procedure improves the quality of the data and the validity of the research findings (Van Bruggen et al. 2002).

### **Sample Size and Statistical Power**

Hence we used  $N = 50$  business units in our hypothesis tests and not the (larger) number of individual respondents. While this is a small sample size, it is important to note that: (1) our sample includes the majority of the firms that are the major users of CRM in their respective industries, and (2) we expect strong effect sizes. The former provides confidence

that the sample is sufficiently representative of the population strata to support hypothesis testing. The latter expectation is based on CRM consulting reports indicating large differences between “best-in-class” and more typical firms (e.g., Aberdeen Group 2007). For example, with  $N = 50$ , strong effect sizes (multiple correlation of 0.25,  $f^2 = 0.33$ ) and four predictor variables, a multiple regression would have a more than acceptable power of 0.89 (using the G\*Power 3.0 software, <http://www.psych.uni-duesseldorf.de/aap/projects/gpower/>). However, we use a structural equation modeling approach, in particular partial least squares (PLS), and not ordinary regression. As Marcoulides and Saunders (2006) point out, much more needs to be done to justify conclusions drawn from small samples using PLS. They recommend a five-step approach that we follow here, which shows that small samples can be appropriate given certain conditions. We discuss the results of applying their approach in the section “Analysis and Results” and find that  $N = 50$  firms can be justified, given our theory, accuracy of measurement and effect sizes.

## **Measures**

The survey questionnaire contained items to measure all the constructs and controls in our model, together with definitions for each of the various capabilities, and descriptive items on the respondent and company. Most questions used 5-point or 7-point Likert or semantic differential scales. In those cases where the directionality was reversed to reduce response bias, the results are presented here in a manner that ensures directionality is consistent and logical. The questionnaire items and descriptive statistics for these data are shown in Table 1. The full questionnaire is available from the authors upon request.

## **Dependent Variable**

*Performance* was measured using subjective assessments of the business unit’s performance relative to other competitors in the same industry along four dimensions: return-on-

investment, success at generating revenue from new products, cost reduction, and level of repeat business with valuable customers. To overcome problems of short-term fluctuations in performance, the respondents were asked to evaluate the relative competitive performance over the “last three years”.

### **Independent Variables**

To capture the lower-level capabilities of *human knowledge*, *IT infrastructure* and *business architecture*, we developed three sets of measures (scales). For human knowledge, we took four scale items from Davenport et al. (2001) that capture the human processes and procedures used to extract raw data and convert them into customer knowledge. For the *IT infrastructure* scale, we used four items from the IT (Bharadwaj 2000) and marketing literatures (Reinartz et al. 2004) that place strong emphasis on the effectiveness of the integrated IT infrastructure and its ability to generate an accurate picture of the customer. For the *business architecture* scale, we adapted three items from Day and Van den Bulte (2002) capturing the business influence that incentives, training and culture play in converting customer knowledge into action.

To develop the second-order construct, *superior CRM capability*, we used an approach similar to Marchand et al.’s (2000) concept of information orientation or Day and Van den Bulte’s concept of customer relating capability. In this case, respondents were asked to compare their overall capability on, for example, human knowledge directly with their competitors. The question posed was: “Compared to your direct competitors, how do you rate your organization overall on human knowledge?” This was repeated for each of the three capabilities. This procedure allowed us to measure superior CRM capability as an empirically weighted composite of these three overall comparisons, as well as to investigate the relationships between this composite and the three lower-level scales discussed above. This dual measurement approach at the higher and lower levels also allowed the structural

equation model to be identified for the purposes of estimation. This provided an alternative to the repeated indicator approach that is commonly used to measure higher-order constructs (Lohmoller 1989; Wetzels et al. 2009).

The *strategic emphasis* construct was measured by asking respondents to allocate 100 points across *customer intimacy*, *operational excellence* and *analytical* objectives for their CRM program. Few firms in this sample emphasized analytical objectives. Rather, firms commonly placed an emphasis on customer intimacy (revenue enhancement), operational excellence (cost reduction) or some balance between the two. Given this finding, these data were transformed into a single-item measure, namely the ratio of the emphasis placed on customer intimacy to that placed on other objectives. Because this ratio showed a skewed distribution, we used the natural log transformation in our analyses. As Marcoulides and Saunders (2006) note, departure from normality is a problem for small samples. However, after transformation, the distribution of this ratio was normal. Finally, *firm size* was operationalized both as the number of customers and the number of employees (Amburgey and Rao 1996). Again, because these distributions were skewed, we used log transformations of these two variables. Other control variables, such as industry sector, did not explain any variance in relative performance.

## **ANALYSIS AND RESULTS**

A two-step approach to data analysis was performed that included: (1) a detailed assessment of the measurement model, and (2) estimation of the structural equation model and hypothesis tests.

### **Assessment of the Measurement Model**

To ensure the validity of all measures, we examined key informant bias, non-response bias, common method bias and convergent and discriminant validity. We also examined the

correlation between our subjective measure of performance and objective performance data when available.

To measure the impact of *key informant bias*, t-tests were used to examine differences of opinion between top (n = 37) and middle management (n = 49) on several variables (including performance). No significant differences were detected. Similarly, to test for *non-response bias*, we used the extrapolation procedure proposed by Armstrong and Overton (1977). No systematic differences existed between early and late respondents, suggesting that this bias was not a major concern.

Two approaches were used to examine *common method bias*. First, multiple responses were received from the business units in this study. This allowed us to compare measures of the independent variables—made by a particular respondent—with a measure of the dependent variable formed from an average of all the responses from that business unit. There was little difference between the coefficients of a model estimated from such data and those reported here, indicating that there was no general factor in these data that might be associated with common method bias. Second, we also used the more traditional Harmon's *ex post* one-factor test to assess common method bias (Podsakoff and Organ 1986). The results of this test indicated that we needed seven distinct factors to explain 78% of the variance in the total set of 21 items. Again, the lack of a dominant single factor suggested that common factor bias was probably not an issue.

Preliminary scale development followed Churchill's (1979) procedure with its emphasis on exploratory factor analysis (Spearman 1904) and internal consistency (Cronbach 1951). Exploratory factor analyses of the underlying questionnaire items indicated *one strong dimension* for each construct, making it legitimate to regard them as unitary constructs and compute reliabilities. The five constructs based on multi-item measures all had composite reliabilities greater than the acceptable threshold of 0.70; with four of the five

having reliabilities above 0.80. The loadings and bootstrap t-statistics for each item are shown in Table 1, together with these reliabilities and the average variance extracted (AVE). The lowest loading was 0.64, with 14 of the 18 loadings above the norm of 0.70. The lowest t-statistic was 3.3, with 14 of the 18 being above 5, indicating stable estimates. In all cases the AVE was above the norm of 50%. Overall, our measures appeared to have acceptable convergent validity.

**Table 1** – Questionnaire Items, Descriptive Statistics & Measurement Model Results for Multi-Item Constructs

<b>Construct and Item Measures</b>	<b>PLS Loading</b>	<b>Bootstrap t-statistic</b>	<b>Composite Reliability</b>	<b>AVE</b>
<b>Performance (5-point scale)</b> <i>Relative to the highest performer in your industry, how has your business performed over the last three years?</i>			0.83	55%
Return on investment (after tax)	0.78	7.4		
Success at generating revenues from new products	0.67	4.8		
Reduction in cost of transacting with customers	0.83	8.8		
Level of repeat business with valuable customers	0.68	5.1		
<b>Superior CRM Capability (7-point scale)</b> <i>Compared to your direct competitors, how do you rate your organization's overall skills and experience at converting data to customer knowledge?</i>			0.85	66%
Customer information infrastructure	0.85	10.7		
Organizational architecture (i.e., alignment of incentives, customer strategy and structure)	0.79	5.7		
	0.79	7.3		
<b>Human Knowledge Capability (5-point scale)</b>			0.87	62%
To assist staff in extracting, manipulating, analyzing, and presenting data in your organization, we have extensive documentation and procedures	0.83	15.8		
Sophisticated models are frequently used to analyze customer data	0.84	16.0		
We have formal procedures for cross-selling and up-selling to customers	0.74	7.6		
When extracting data from CRM systems & databases, most people involved have extensive knowledge of the business issues facing our firm	0.74	9.6		
<b>IT Infrastructure Capability (5-point scale)</b>			0.84	56%
Our relational databases or data warehouse provides a full picture of individual customer histories, purchasing activity and problems	0.82	5.7		
When interacting with our organization, customers see one seamless face	0.64	3.5		
CRM software allows us to differentiate among customer profitability	0.77	4.7		
We are very good at adapting our IT applications and responding to unplanned customer demands	0.75	6.1		
<b>Business architecture capability (5-point scale)</b>			0.76	51%
To what extent are employee/management incentives used in your organization to support customer relationship building?	0.75	6.1		
Investment in training and other resources to support CRM-related initiatives has been extensive	0.75	5.5		
We take a long term view to the formation of customer relationships	0.64	3.3		
<b>CRM Strategic Emphasis (single item)</b>				
Log of the ratio of the percentage emphasis placed on customer intimacy to that placed on all other goals	N/A	N/A		
<b>Controls</b> (log of number of employees, log of the number of customers)	N/A	N/A		

We assessed discriminant validity by comparing the correlation between latent constructs and the square root of the AVE for each (Fornell and Larcker 1981). The correlation matrix in Table 2 shows that these square roots—shown on the diagonal—are greater than the corresponding off-diagonal elements. Thus it is possible to conclude that each measure is tapping a distinct and different construct. For completeness, Table 2 also includes the single-item construct of strategic emphasis, together with the two control variables.

**Table 2** – Correlation of Latent Constructs (diagonal elements are square roots of average variance extracted)

	1	2	3	4	5	6	7
1. Human Knowledge Capability	<b>0.79</b>						
2. IT Infrastructure capability	0.55	<b>0.75</b>					
3. Business Architecture Capability	0.54	0.47	<b>0.71</b>				
4. Superior CRM Capability	0.58	0.46	0.56	<b>0.81</b>			
5. Performance	0.41	0.30	0.40	0.46	<b>0.74</b>		
6. CRM Strategic Emphasis*	0.10	-0.05	-0.06	-0.08	-0.20	<b>1.00</b>	
7. Control: Number of Customers*	0.02	-0.02	-0.06	-0.05	-0.26	-0.34	<b>1.00</b>
8. Control: Number of Employees*	0.23	0.01	0.15	0.34	0.30	-0.01	0.16

\* Log transformed to reduce skewness.

Despite the potential for reporting biases, research has shown that self reported performance data are generally reliable (e.g., Dess and Robinson 1984; Fryxell and Wang 1994). We did our own validation comparing the self reported measures with objective measures of financial performance obtained from a commercially available database. The objective measures included profit and sales revenue—common accounting-based measures—and Economic Value Added (EVA)—a common market-based measure. We obtained these data for half of the firms in our sample. One issue is that the appropriate unit

of analysis for our purposes is a business unit, while these commercially available data are for the overall organization. However, we observed correlations of approximately 0.3 between the subjective and objective measures of performance. This gave us some added confidence in the validity of the measures.

### **The Structural Model**

We tested the conceptual model shown in Figure 1 and its associated hypotheses using partial least squares (PLS). Here, we used Smart PLS (<http://www.smartpls.de/forum/>). PLS relies on bootstrapping techniques to obtain t-statistics for the path coefficients and hypothesis tests. Following standard heuristics, we resampled 200 times to obtain these statistics. However, to be conservative, we did not allow the software to optimize the alignment of the signs of coefficients from these samples.

### **PLS and Sample Size**

Marcoulides and Saunders (2006) set out five steps for assessing the adequacy of the sample size for PLS modeling. The five steps and the implications for our model follow.

**1. Screen the data.** Missing data, outliers and non-normally distributed variables can pose problems in PLS analyses of small samples. Here, we eliminated firms with missing data and one obvious outlier. Both graphical inspection and skewness and kurtosis statistics indicate that the variables for the remaining firms are normally distributed (after log transformation in the case of strategic emphasis and size controls).

**2. Examine the psychometric properties of all the variables in the model.** Poorly measured variables can also pose problems in small samples. However, as discussed previously, all our constructs are well-measured, showing more than adequate convergent and discriminant validity.

**3. Examine the magnitude of the relationships and effects between the variables in the model.** If weak effects are expected and the variables are poorly measured, larger sample

sizes will be needed to reject hypotheses. As noted, the variables used here are well-measured and we expect substantial effects. As will be discussed in detail later, the observed effects are substantial. We are able to explain 43% and 39% of the variance in our two principal constructs, *superior CRM capability* and *performance*, respectively, and the majority of the path coefficients relating to the hypotheses exceed 0.30.

**4. Examine the magnitude of the standard errors of the estimates considered in the proposed model and construct confidence intervals for the population parameters of interest.** Unstable coefficients and wide confidence intervals can be a sign of inadequate sample size. Our use of bootstrapping reveals the majority of coefficients to be stable with narrow confidence intervals. In the outer (measurement) model the bootstrap t-statistics range from 3.3 to 16.0, and in the inner (structural) model the t-statistics on the principal paths are all greater than the norm of 2.

**5. Assess and report the power of the study.** Using the G\*Power software, *post hoc* power analyses indicate that the power of this study is greater than the accepted norm of 0.80, with achieved powers in the high 0.9s. These analyses include F-tests on the proportion of variance explained in the two principal constructs and one sample t-test on the paths relating to hypotheses (where the null hypothesis is that population values are zero).

Overall, the five-step procedure of Marcoulides and Saunders (2006) indicates that our sample of 50 business units is adequate for hypothesis testing.

### ***Effect of CRM on Firm Performance***

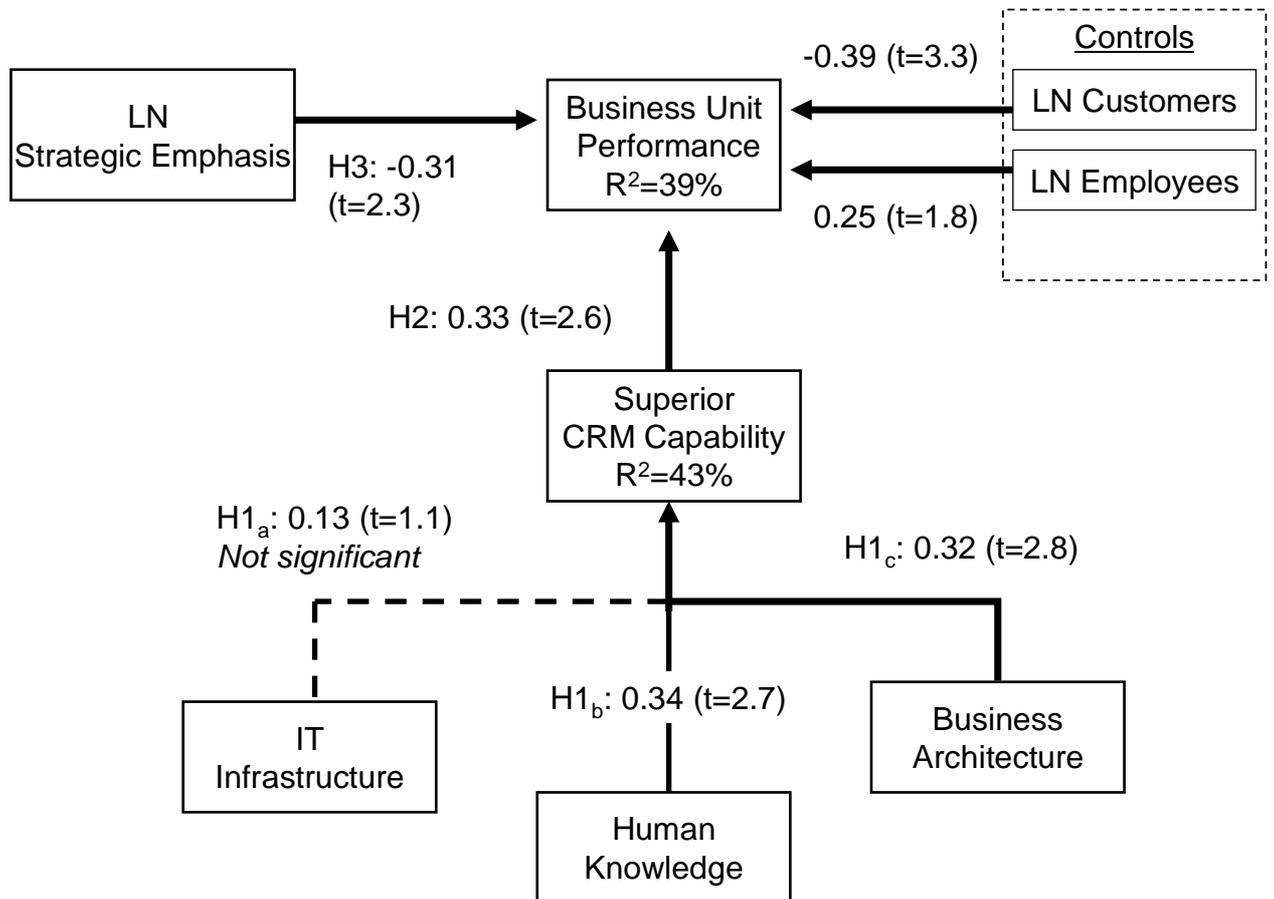
The main effects model (see Figure 2) reveals a number of interesting findings. First, although PLS does not have an overall index of model fit, the fact that the key constructs are well explained and most path coefficients are statistically greater than zero and in the predicted direction lends support to the model. The three lower-level capabilities explain 43% of the variance in the enterprise-level capability of *Superior CRM*. In turn, this capability, along with *Strategic Emphasis* and the two controls, explains 39% of business unit

performance. 43% and 39% are relatively high levels of explanation for a model from cross-sectional survey data.

Using Cohen's (1988) procedure for determining effect sizes on  $R^2$  and comparing the full theoretical model on performance with one containing just the control variables gives an effect size of 0.26. Cohen suggests a moderate effect size is 0.15 and a strong one 0.35.

Second, the impact of IT infrastructure is only weakly related to CRM capability ( $\beta = 0.13$   $p = n/s$ ). Although the standardized beta score is positive as hypothesized, it is not significantly different from zero and  $H1_a$  receives no support. For these business units, and once we account for the other effects, IT infrastructure is not an important determinant of the enterprise-level capability. Third, consistent with our other hypotheses, CRM capability is driven primarily by human knowledge ( $\beta = 0.34$ ,  $p < 0.01$ ) and appropriate business architecture ( $\beta = 0.32$ ,  $p < 0.01$ ). These positive and significant standardized beta scores provide support for  $H1_b$  and  $H1_c$ .

**Figure 2** – Direct Effect Model with Control Measures

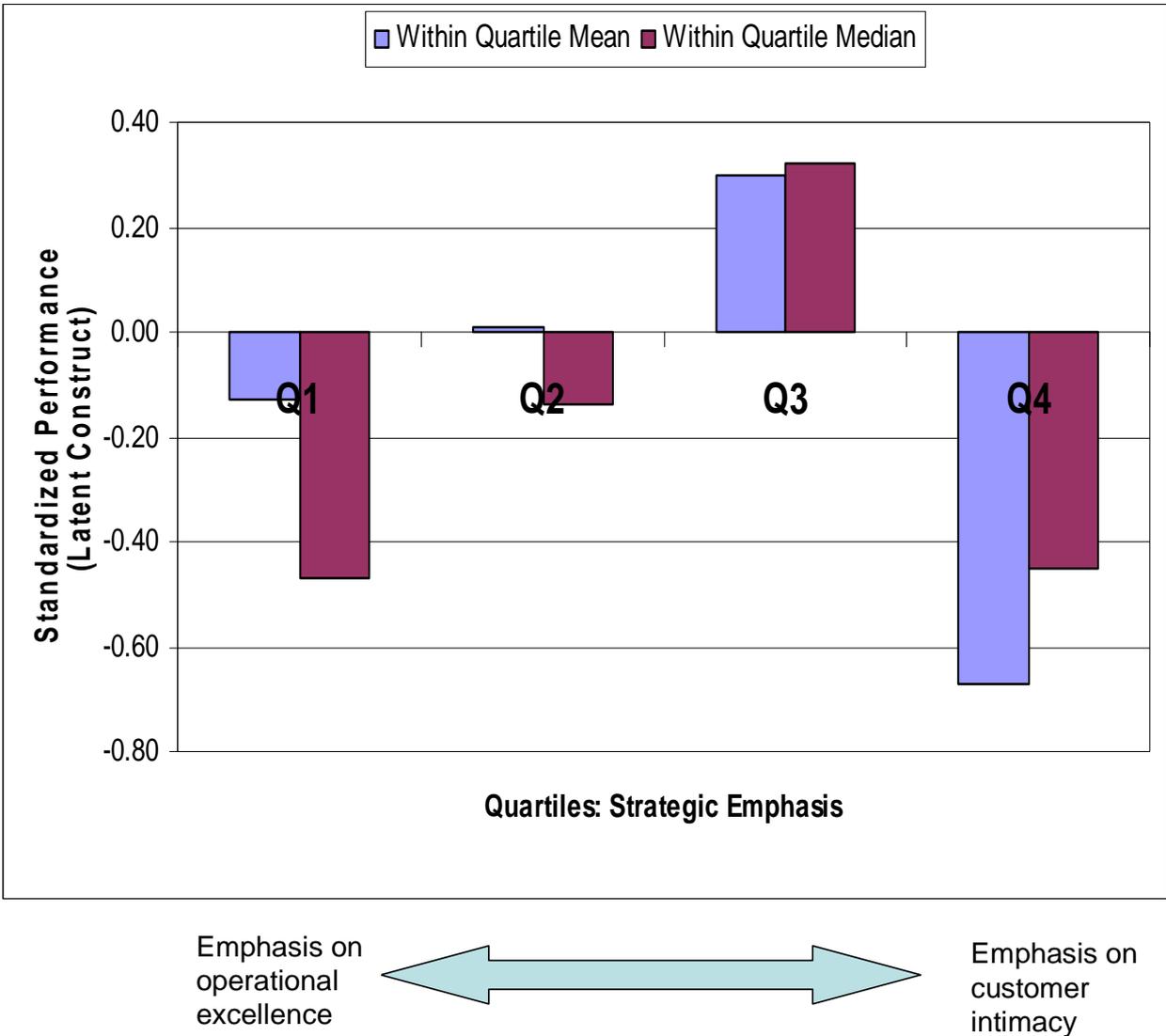


As we argued in H2, individual capabilities are necessary but not sufficient for superior performance. What is required is the orchestration of individual capabilities—that do not individually need to be superior to the competition—into a higher-order capability that is superior to the competition. The results in Figure 2 are as theoretically expected. Superior CRM capability has a significant impact on performance ( $\beta = 0.33$   $p < 0.01$ ), providing support for hypothesis H2.

Finally, the direct effect of CRM strategic emphasis on performance requires discussion. Our data support H3 and indicate that the most optimal strategy is one based on both revenue growth and cost reduction. Figure 3 illustrates this effect by relating overall performance to the quartiles of the distribution of strategic emphasis. Quartile 1 represents those business

units which place their dominant emphasis on operational excellence (cost reduction) and quartile 4 those which place their dominant emphasis on customer intimacy (revenue enhancement). As can be seen, both of these groups perform poorly. It is the business units with greater balance between revenue enhancement and cost reduction goals (quartiles 2 and 3) that perform better. In particular, quartile 3—which has a 1:1 balance between the two—performs by far the best. Hence H3 is confirmed.

**Figure 3 – Performance and Strategic Orientation**



## **DISCUSSION AND THEORETICAL CONTRIBUTIONS**

Organizations frequently assume that advances in IT infrastructure and software will not only generate an economic return but also serve to define a business and its competitive strategy (Bharadwaj 2000; Santhanam and Hartono 2003). This study makes three important contributions to understanding this supposition by addressing: (1) how to empirically measure the impact of IT, (2) the specific role that IT actually plays in supporting a CRM program, and (3) the contribution of CRM programs to firm performance. Each of these points is discussed in turn.

First, our study reveals that the contribution of IT to a CRM program is best measured as a higher-order combination of IT, human and business capabilities. This follows because CRM is embedded in a web of capabilities, none of which is superior alone, but when combined with appropriate resources, other capabilities and an organizing context, creates a higher-order capability that can make a significant contribution to firm performance. This approach is consistent with the current state of RBV theory (Newbert 2007). Few companies master these socially complex capabilities effectively, which is exactly why CRM capability is potentially a source of competitive advantage—it takes time and effort to develop, it is rare and difficult to imitate, and is causally ambiguous.

Second, the marginal contribution of IT to a superior CRM capability stands in contrast to what the sales people of companies like Siebel, Oracle, SAP and SAS would like us to believe. Alone, IT offers no significant competitive advantage to the firm, but this does not negate its fundamental operational importance to CRM in all sectors of industry. Information technology is clearly necessary to automate customer touch-points, to combine data silos and to enable customer data interpretation. However, this aspect of IT is effectively commoditized and alone adds nothing to competitive advantage. Our findings validate existing “wisdom” in the literature, where scholars have concluded that in order to be

successful, organizations must combine IT with another capability (Day 2003; Powell and Dent-Medcalfe 1997).

The results also support work by Zuboff (1988), who claims that one of the primary reasons many organizations fail when implementing new forms of IT is because they simply do not have the requisite skills and experience necessary to use the available data. The specific human capabilities and business structures revealed in this study are critical to transform what is essentially a passive resource (i.e., IT-enabled customer data) into actionable decisions such as whether a customer is more or less important, whether an idea for a new product is attractive or marginal, and so on. In other words, firm performance is improved not through the simple possession of capabilities but because the firm makes better use of its capabilities.

Third, the survey results confirm that a higher-order “superior CRM capability” is a robust indicator of firm performance. It provides greater theoretical parsimony and reduced model complexity (Marcoulides et al. 2009) and reinforces the finding that IT business value is represented in those behaviors manifested as a consequence of IT investment (Seddon 1997). This is particularly important because although companies are under constant pressure to engage in a plethora of IT-based initiatives, few have the potential to use those initiatives to create positions of sustained measurable advantage.

Finally, our results reveal that an optimal CRM strategy should jointly emphasize revenue growth and cost reduction. This is important in providing a consistency not seen in prior research. For example, Rust et al. (2002) stress that there can be conflict between a revenue expansion and cost reduction strategy, whereas Homburg et al. (2008) report that a dual strategic emphasis has a positive impact on customer profitability.

### **Managerial Implications**

There is a temptation for managers to be normative about the pursuit of competitive advantage and direct attention and resources toward particular CRM capabilities, mainly

because it allows managers to simplify complex CRM implementation and concentrate their efforts on “getting it right”, one capability at a time. This approach, however, would seem to be flawed, as well-developed technical, human and business capabilities in isolation are insufficient to generate competitive superiority. In the specific case of CRM, each capability is nested within an intricate organizational system of interrelated and interdependent resources.

By comparing capabilities relative to competitors, we offer benchmark data that show managers the necessary conditions for success. However, knowledge of what is required *per se* is not sufficient for success. For these capabilities to be exercised involves a series of judgments about the particular CRM strategic emphasis. An indiscriminant emphasis on customer intimacy to the exclusion of operational efficiency and analytic orientations will actually diminish performance. This observation reaffirms a growing consensus that the context within which IT is applied is an important feature of overall performance (Ray et al. 2005). In other words, to start “dating” customers with the promise of—but not the capability to efficiently fulfill—a genuine relationship, is a dangerous strategy: customers’ expectations are not met, staff become frustrated and executives walk away disappointed.

### **Limitations and Direction for Further Research**

This study has limitations that qualify our findings and present opportunities for future research. Although it is often argued that cross-sectional designs are justified in exploratory studies that seek to identify emerging theoretical perspectives, there is always the issue of capturing causality. Therefore the results of this study should be viewed as preliminary evidence that the main constructs (i.e., CRM capabilities) influence performance. This echoes the now customary call for the use of longitudinal studies to corroborate cross-sectional findings and examine performance prior to and after a CRM program implementation. Longitudinal studies would provide the necessary insight required to evaluate this effect.

Finally, because our study is representative of large, high-performing organizations that

aggressively use CRM, one could reasonably argue that such organizations benefit through the reinvestment of profits enabling them to devote considerable resources to CRM programs, thereby reinforcing their success. Future work should seek to control for resource munificence (Klein 1990).

## **CONCLUSION**

Customer relationship management suffers when it is poorly understood, improperly applied, and incorrectly measured and managed. This study reveals the combination of investment commitments in human, technological and business capabilities required to create a superior CRM capability. The exact extent of these capabilities is *ex ante* indeterminant and should be guided by a strategic emphasis that combines customer intimacy, operational excellence and data analytics. By integrating two schools of thought—capabilities and strategic emphasis—we build a more managerially relevant theory of CRM performance that shows *why* CRM programs can be successful and *what* capabilities are required to support success.

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