

The Impact of Technological and Organizational Implementation of CRM on Customer Acquisition, Maintenance, and Retention

Jan U. Becker*

The Anderson Graduate School of Management, University of California, Los Angeles

Goetz Greve

Hamburg School of Business Administration, Germany

Sönke Albers

Christian-Albrechts-University at Kiel, Germany

Forthcoming
International Journal of Research in Marketing

Acknowledgements

We thank Marc Fischer, Michel Clement, two anonymous reviewers, and the editor for their detailed suggestions on previous versions of this paper and gratefully acknowledge many helpful comments from seminar participants at the University of California, Los Angeles.

* *Corresponding author: Tel.: +1 310 526 1374; Fax: +1 310 206 7422.
E-mail addresses: jan.becker@anderson.ucla.edu, goetz.greve@hsba.de, and albers@bwl.uni-kiel.de.*

The Impact of Technological and Organizational Implementation of CRM on Customer Acquisition, Maintenance, and Retention

Abstract

In recent years, customer relationship management (CRM) has been a topic of the utmost importance for scholars and managers. Despite the evidence provided by numerous empirical studies, many companies that have implemented CRM systems report unsatisfactory levels of improvement. This study analyzes what influence companies can expect CRM implementation to have on performance and how they can leverage its impact. The authors propose a conceptual model that investigates the link between technological and organizational implementations, as well as the implementations' interactions with management and employee support and CRM process-related performance. By measuring CRM performance in terms of initiating, maintaining, and retaining customer relationships, the study provides a detailed picture of what CRM implementations are capable of achieving. The results of the empirical study, conducted across four industries and ten European countries, indicate that CRM implementations do not impact performance regarding all aspects of the CRM process alike, and that they do have an impact only if adequately supported by respective company stakeholders.

Keywords: Customer Relationship Management, CRM Process, Customer Life-Cycle

1 Introduction

The management of customer relationships has become a top priority for many companies. In many competitive markets, businesses invest substantially in customer relationship management (CRM) implementation (Bohling et al., 2006). Lately, though, companies have become increasingly displeased with CRM implementations, as the majority of them are falling short of the expectations that precede them (Rigby, Reichheld, & Schefter, 2002; Zablah, Bellenger, & Johnston, 2004; CSO Insights, 2006) and are therefore considered failures (Gartner Group, 2003). Based on evidence from studies demonstrating that CRM activities positively impact company- or customer-related performance, academic literature has long argued that companies should actively engage in customer relationship management (Morgan & Hunt, 1994; Slater & Narver, 1995). However, most studies neglect two issues when it comes to the implementation of CRM and its performance measurement.

First, academic literature has primarily addressed the influence of single CRM activities, regarding either technological (e.g., Jayachandran et al., 2005), organizational (e.g., Sabherwal, Jeyaraj, & Chowa, 2006), or strategic aspects (e.g., Bell et al., 2002), on performance. However, CRM “requires a cross-functional integration of processes, people, operations, and marketing capabilities that is enabled through information, technology, and applications” (Payne & Frow, 2005, p. 168). Thus, CRM implementation can only be evaluated using a more holistic approach. In practice, many companies have focused on technological solutions for the customer database accompanied by software training programs (CSO Insights, 2006). However, successful implementation also requires changes in organizational structures, employees’ motivation to make use of CRM, and sophisticated project management geared toward dealing with the changes initiated (Day & Van den Bulte, 2002). Success does not come from the sum of single

activities, but rather from interactions between activities. This especially applies to interactions with support activities within the company (i.e., top management's providing CRM strategic support and employees' actually using CRM systems; Payne & Frow, 2005). According to Boulding et al. (2005, p. 161), little attention has been paid to people-related interactions.

Second, in recent studies on CRM performance, measurement has primarily been based on company-related performance metrics such as company growth (Day & Van den Bulte, 2002; Zahay & Griffin, 2002), market share (Schoder & Madeja, 2004; Jayachandran et al., 2005), and profitability (Cao & Gruca, 2005; Kim, Suh, & Hwang, 2003), or on customer-related performance measures such as customer satisfaction (Stefanou, Sarmaniotis, & Stafyla, 2003) Croteau & Li, 2003) and customer loyalty (Colgate & Danaher, 2000; Gustafsson, Johnson, & Roos, 2005). Despite the necessity of measures at the aggregate company level, it seems worthwhile to take a closer look at the value chain and assess why CRM sometimes fails to meet expectations (Lehmann, 2004). Since customer bases are not homogeneous with regard to the relationship stage (Dwyer, Schurr, & Oh, 1987; Reinartz, Krafft, & Hoyer, 2004), the question arises of whether the implementations are equally able to serve CRM objectives in each of the relationship stages. If CRM activities influence each stage differently, negatively correlated results at each stage could lead to an insignificant impact on overall outcomes. In order to gather better diagnostic information on why some CRM implementations are successful while others are not, we measure how they meet intermediate objectives depending on different aspects of the customer relationship management process (i.e., acquiring new customers, maintaining and developing existing customers, or regaining already lost customers; see Reinartz et al., 2004).

The contributions of this study are as follows. First, we introduce a novel set of performance measures that capture the process-related objectives of CRM. Second, we investigate the impact of CRM implementations on performance with regard to the CRM process. Third, we test the

moderating effect of management and employee support on the performance of those CRM implementations. The results reveal which CRM objectives companies may actually expect the implementations to fulfill and, hence, show which CRM implementations companies should invest in.

In the following section, we develop a conceptual model and identify hypotheses regarding the impact of organizational and technological CRM implementations on performance, as well as that of their interactions with management and employee support. Using data across four industries and ten European countries, our findings show that investments in CRM have little effect on performance unless top management and employees buy into organizational changes and technological systems and actively support them. As this effect does not hold equally for all aspects of the CRM process, we identify explanations as to why CRM implementations may be perceived as failing and provide suggestions for further research.

2 Conceptual framework and hypotheses

CRM has been one of the prevalent topics in recent years in both academic theory and practice (Kumar, Lemon, & Parasuraman, 2006; Boulding et al., 2005). Thanks to numerous articles showing the positive impact of CRM activities (especially those of an organizational, strategic, and technological nature) on performance (i.e., company-related performance: see Day & Van den Bulte, 2002; Cao & Gruca, 2005; Palmatier et al., 2007; or customer-related performance: see Stefanou et al., 2003; Gustafsson et al., 2005; Mithas, Krishnan, & Fornell, 2005; Colgate & Danaher, 2000), companies have invested billions of dollars in implementing CRM solutions (Ahearne, Hughes, & Schillewaert, 2007). Nevertheless, companies complain that CRM implementations do not live up to their expectations (Rigby et al., 2002; Zablah et al., 2004).

While the findings of extant research certainly underline the importance of CRM for companies' overall success, they do not capture the implementations' contribution with regard to the specific objectives of CRM. Provided that CRM is a cross-functional process that focuses on initiating, maintaining, and retaining long-term customer relationships (Reinartz et al., 2004), performance measures should account for different aspects of the process. Acquiring new customers represents the first objective in the customer relationship process (i.e., *customer acquisition*). We assume that regained customers possess a potential equivalent to that of newly acquired customers and, accordingly, that they deserve as much attention. We therefore consider regained customers as significant contributors to success in terms of customer initiation as well (Thomas, Blattberg, & Fox, 2004). For the second objective, *customer maintenance*, companies need to develop and intensify customer relationships in such a way that they result in higher customer satisfaction, expanded relationships (e.g., through cross- and up-selling activities), and increased customer revenues. However, relationships show decreasing returns at the end of the customer life-cycle (Dwyer et al., 1987). While Reinartz et al. (2004) conceptualize customer relationships as ending at this point, we propose that *customer retention* is an appropriate objective of CRM. For this purpose, companies need to identify previously profitable but currently inactive customers and initiate appropriate activities to reactivate those customers. Importantly, despite the assumption that all objectives have a positive impact on companies' overall performance, CRM implementations may affect each of the objectives differently. Therefore, the aggregation of (e.g., negatively correlated) influences for all aspects could lead to insignificant overall outcomes. Since no previous study has focused on CRM process-related objectives, there is an obvious need to provide empirical evidence regarding which objectives can be achieved through CRM implementations.

Furthermore, extant research has primarily focused on investigating the performance of a number of single CRM activities (e.g., Stefanou et al., 2003; Mithas et al., 2005). While the findings are necessary to confirm the relevance of CRM (Boulding et al., 2005), this focus on single activities does not adequately capture the complexity of CRM implementation projects. In reality, companies often engage large teams of either internal project members or consultants to implement complex CRM technology systems (e.g., databases, analytic tools, software applications) or to align the companies' organizations and structures according to the cross-functional perspective of CRM (CSO Insights, 2006). We assume that the introduction and impact of these activities form the core of CRM and determine its performance (in terms of main effects). However, it is not sufficient merely to implement those systems and hope that they will be successful—interactions between people and processes need to be considered as well because they represent the degree to which management and employees accept CRM and support its implementation (in terms of interaction effects). In order to identify the impact of investments in technological or organizational forms of implementation associated with CRM process-related objectives, we introduce a conceptual model as depicted in *Figure 1*. The model incorporates both types of CRM implementation (i.e., technological and organizational) and their contribution to CRM's objectives, as well as the moderating effects of support from management and employees within the firm. In the remainder of this section, we describe the conceptual framework of the model and derive hypotheses.

>>Figure 1 about here<<

One factor of strong theoretical and managerial importance is the implementation of information technology (i.e., *technological implementations*; Hitt & Brynjolfsson, 1996; Menon, Lee, & Eldenburg, 2000, Zahay & Griffin, 2004). Set up and configured properly, IT systems

provide for the acquisition, storage, and accessibility of customer information (Sinkula, Baker, & Noordewier, 1997; Slater & Narver, 1995) as well as its analysis (Batislam, Denizel, & Filiztekin, 2007; Kamakura et al., 2003; Rust & Verhoef, 2005), which we hypothesize to be positively associated with performance.

H1a. There is a positive relationship between technological implementations and initiation, maintenance, and retention performance.

Since the knowledge base of customer information increases with the length of the relationship, and since the effectiveness of CRM systems relies heavily on the quantity and quality of their data input, we hypothesize an increasing impact of technological implementations on performance during the customer relationship management process.

H1b. The positive relationship between technological implementations and performance increases over the length of the customer relationship management process.

CRM does not solely consist of technological implementations (Payne & Frow, 2005). Changes in organizational structures are equally important, since technological systems often involve customer information that is used for different management functions—e.g., marketing, sales, or service. In order to disseminate customer knowledge and customer orientation within the organization (Kohli & Jaworski, 1990; Day & Montgomery, 1999), *organizational implementations* need to provide whatever changes are necessary to the organizational structure, such as relevant training and rewards for employees who engage in CRM-related activities (Reinartz et al., 2004). We propose that all of these changes influence performance positively.

H2a. There is a positive relationship between organizational implementations and initiation, maintenance, and retention performance.

Since the existence of appropriate organizational structures and well-trained, motivated sales personnel should facilitate the acquisition of customers, we hypothesize that organizational implementations should have their maximum impact in the early stages of the customer life-cycle.

H2b. The positive relationship between organizational implementations and performance decreases over the length of the customer relationship management process.

The performance of CRM implementations does not depend on their mere existence. Following the remarks of Boulding et al. (2005) observing that little attention has been paid to the role of employees in the implementation of CRM activities, we investigate the moderating effects of support from within the company (i.e., at the managerial and employee levels) on the performance of organizational and technological implementations.

One role of management is to support CRM implementations by creating a corporate environment that acknowledges CRM as a vital element of business strategy (Narver & Slater, 1990; Kohli & Jaworski, 1990; Day, 1994; Shah et al., 2006) and by engaging in activities that demonstrate their commitment to CRM implementation (Auh & Menguc, 2005; Im & Nakata, 2008; Jarvenpaa & Ives, 1991; Sabherwal et al., 2006). We assume that if top management effectively communicates that CRM is not merely a fad but is instead the company's strategic orientation, this will consequently leverage the effectiveness of organizational implementations. Thus, we hypothesize that:

H3. The more strongly management supports CRM, the higher will be the impact of organizational implementations on performance.

Although *employee support* is regarded as a key driver of organizational success (Mahmood, Hall, & Swanberg, 2001; Devaraj & Kohli, 2003; Sabherwal et al., 2006), little attention has been paid to the regular usage of IT in CRM contexts (Jayachandran et al., 2005). Despite the fact that new technology would increase their individual performance (Ahearne et al., 2007; Ahearne et al., 2008), employees (e.g., sales personnel) are often reluctant to adopt it (Simon & Usunier, 2007; for a detailed overview of reasons why, see Speier & Venkatesh, 2002). We hypothesize that implementation success heavily depends on employee support for CRM (i.e., its *de facto* usage; Ahearne et al., 2007).

H4. The greater the employees' support for technological systems is, the stronger will be the impact of technological implementations on performance.

On the basis of this conceptual framework, we investigate the effectiveness of organizational and technological implementations and indicate which investments do in fact meet their purpose regarding specific aspects of the CRM process. Additionally, we show what role management and employee support for those implementations plays, and how companies can leverage the performance of CRM implementations.

3 Empirical analysis

3.1 Sample

In order to empirically test our conceptual model, we collected data with the help of an international consulting company well-known for conducting CRM projects (including the

implementation of organizational changes as well as technological systems) for clients. In order to reach companies with substantial experience in CRM that used a large variety of contact media in communicating with their customers, we focused on business-to-consumer markets in four different industries (financial services, retail, information technology, and utilities; see *Table 1*). We randomly selected 400 companies from ten European countries out of the consulting firm's client database. This approach promised unique data with high internal validity, since each of the CRM projects had been planned, conducted, and implemented by one single company.

>>Table 1 about here<<

After pre-testing, we addressed the questionnaire to the responsible CRM project managers of the respective companies. We received a total of 90 usable questionnaires in total, yielding a response rate of 22.5 percent. As reflected in the composition of the client base, the responding companies were mainly large companies with more than 5,000 employees where either top management or the marketing and sales division were responsible for CRM matters (see *Table 1*). In more than 69 percent of cases, senior executives from top management or the marketing and sales departments responded to the objective questions regarding which CRM systems were actually implemented and assessed the company's performance development with regard to the CRM process-related aspects.

3.2 Measure development

Following the standard procedures for scale development (Gerbing & Anderson, 1988; Rossiter, 2002), we based our scales on a review of literature and interviews with CRM managers. As we wished to account for the range of activities that encompass technological and

organizational forms of implementation, we were only partially able to rely on existing scales and, therefore, had to create new scales that would satisfy the characteristics of the CRM context.

We measured performance by asking subjects to estimate relative improvement (as a percentage) for each aspect. In particular, we operationalized *initiation performance* with the help of two formative indicators to account for the rate of newly acquired and regained lost customers. The constructs, measuring performance for maintenance and retention, are composed of three and two reflective indicators, respectively. Whereas *maintenance performance* encompasses improvements regarding customer satisfaction, revenue per customer, and the realization of cross- and up-selling potential, *retention performance* measures CRM's impact on customer retention and the reduction of migration. An assessment of the validity does not indicate any serious problems—an explorative factor analysis for both constructs shows factor loadings greater than .7; the Cronbach's alpha values are above .76, and item-to-total correlations for all items are below .77 (Bagozzi & Yi, 1988; Nunnally, 1978). Descriptive values of the performance measures are displayed in *Appendix A*.

The construct *technological implementation* is comprised of 19 items capturing its different facets: information acquisition, storage, accessibility, and evaluation (see details in *Appendix A*). To reduce collinearity, we followed Little et al. (2002) and used item averages for the correlated items regarding the types of data stored and the methods of analysis. The resulting formative indicators for the facets of acquisition, storage, and evaluation did not reveal any serious collinearity problems. The reflective indicators for information accessibility proved to be reliable, showing acceptable psychometric properties with factor loadings well above .7 and Cronbach's alpha exceeding .8. The item-to-total correlations were well above .6 and, therefore, indicate a high degree of internal consistency.

The construct *organizational implementation* consists of 10 items in total that capture the facets of organizational structure, employee training, and employee incentives. For employee training and incentives, we averaged the respective items (Bergkvist & Rossiter, 2007). Additionally, the reflective indicators for organizational structure show acceptable validity (factor loadings and Cronbach's alpha $>.7$; item-to-total correlations $>.5$).

We measured *management support* using seven items. The items—capturing the facets of CRM orientation and top management commitment—were based on the scales by Narver and Slater (1990) and Jaworski and Kohli (1993), respectively. The scales account for how far CRM is incorporated into the company strategy and to what extent top management is involved in the implementation process. Overall, we found the indicators to be reliable, as the factor loadings (.78 and .61), the Cronbach's alpha values (.68 and .86), and the item-to-total correlations ($>.77$ and $>.71$) were acceptable. To measure *employee support*, we asked the subjects to rate actual usage regarding their CRM application components on a 0-100 scale.

Additionally, we used the existing scale from the study by Achrol and Stern (1988) to measure *customer heterogeneity* in a formative way. To control for *industry* influences, we used dummy variables indicating the respective industry (i.e., financial services (reference category), retail, information technology (IT), and utilities).

We only contacted managers responsible for CRM project management, since we assumed them to be knowledgeable about CRM implementation. A general concern in key informant studies is that respondents may have a biased view of the subject that could skew both independent and dependent variables (Malhotra, Kim, & Patil, 2006). While the independent variables in our study mainly contained objective questions regarding the implementation of CRM activities, the dependent variables relied on subjective assessments. Hence, we consider

this bias to be negligible and believe the key informant design to be appropriate for our study (Ailawadi, Dant, & Grewal, 2004).

A further concern may be related to the possible existence of a *common method bias*. The operationalization of performance measures on the basis of scales different from those of the performance drivers is expected to limit the common method variance. In addition, we chose a twofold approach to assess the existence of a common method bias within our data. First, we used *Harman's single-factor test* (Harman, 1967), and, secondly, we applied the *marker-variable technique* proposed by Malhotra et al. (2006). Both approaches indicate that common method variance is negligible. The single-factor test, which assumes that a bias exists if the exploratory factor analysis of all variables extracts only one factor (Podsakoff et al., 2003), extracted a total of 21 factors—indicating that no serious common method bias is present. Additionally, the application of the marker-variable technique only showed minor correlation variations when corrected for the common method variance (Lindell & Whitney, 2001). Thus, the results are in line with the conclusions of Malhotra et al. (2006), which indicate that common method variance does not play an important role in information systems research.

3.3 Specification and estimation

Ensuring the multifaceted nature of the constructs in our model while still keeping the number of parameters in the model at a manageable level, we first estimated the effects by PLS (Chin, 1998; Ringle, Wende, & Will, 2005). As specified in *Appendix B*, the constructs provide an acceptable fit for the three models.

>>Table 2 about here<<

Table 2 presents the means and correlations of the constructs. Judging by the means of the performance measures, the respondents rate the CRM projects' success in terms of initiation, maintenance, and retention rather low. However, companies with higher levels of technological and organizational implementation perform better (see the difference between lower (< .333) and upper quantile (> .667) in *Table 3*). The same applies for the support activities, where the leverage is higher for maintenance and retention.

>>Table 3 about here<<

In order to test the hypotheses, we followed Fornell et al. (1996) and Reinartz et al. (2004) and used the weighted product of the PLS weights and the individual indicator values for the variables in the regression model specified in *Equation 1*:

$$y_{ij} = \alpha_i + \sum_r \beta_{ir} \cdot MEV_{irj} + \sum_k \gamma_{ik} \cdot IEV_{ikj} + \sum_s \delta_{is} \cdot CEV_{isj} + \varepsilon_{ij} \quad (1)$$

In this model, we measure the performance y_{ij} for the different aspects i of the CRM process (i = initiation, maintenance, and retention) for each company j . The main effect variables (MEV_r) express the direct influence of organizational implementation, technological implementation, management support, and employee support. The variable IEV_k accounts for the interaction effects between organizational implementation and management support, and for those between technological implementation and its support from employees. Customer heterogeneity and dummy variables for the three different industries are modeled as control effects (CEV_s).

>>Table 4 about here<<

We estimate the model with multiple equations and auto-correlated error terms by using the seemingly unrelated regression (SUR) framework, thereby deriving the results reported in *Table*

4. Considering the simplicity of the model, the r-squares between .19 and .30 show an appropriate fit to the data. Additionally, low variance inflation factors (< 1.5) indicate that collinearity is not a problem. Overall, the findings support the concept of distinct aspects within the customer relationship management process.

3.4 Results

We tested the hypotheses based on the significance of the unstandardized regression coefficients in *Table 4*. For the relationship between technological implementations and initiation, maintenance, and retention performance, *H1a* proposes a positive influence. The hypothesis is partly supported, as we find significant and positive coefficients regarding the initiation and maintenance aspects. Judging from the results of the Chow test (Chow, 1960), we find technological implementations have a fairly constant impact on CRM process-related objectives and, contrary to *H1b*. Regarding the influence of organizational implementation on performance, we hypothesized a positive relationship in *H2a*. However, organizational implementation significantly impacts only initiation and only then when accompanied by management support. Furthermore, *H2b* is rejected, as the coefficients do not significantly vary across the aspects (it is possible that endogenous effects may have led to these insignificant results, as the performance-enhancing effects of large CRM implementations may have been compensated for by successful companies which feel less need to pursue CRM implementations¹).

However, the model shows significant moderating effects between management and employee support, as well as between technological and organizational implementations. In

¹ The cross-sectional design of the study prevents us to disentangle such effects.

support of *H3*, we find that organization implementations with management support have a significant and positive effect on performance in terms of initiation ($\gamma_{1, \text{ini}} = .216, p < .05$). We also find support for *H4*—the effect of technological implementations with employee support on performance is significant and positive for both the initiation and the maintenance aspect ($\gamma_{2, \text{ini}} = .153, p < .1$; $\gamma_{2, \text{main}} = .160, p < .05$). Considering the more or less equal coefficients, the role of technological implementations is quite constant for both the initiation and maintenance aspects.

Finally, we find significant relationships between our control variables and performance. Whereas the industry dummies for retail ($\delta_{2, \text{ini}} = -.057, p < .1, \delta_{2, \text{main}} = -.082, p < .01$; $\delta_{2, \text{ret}} = -.067, p < .1$), IT ($\delta_{3, \text{ini}} = -.097, p < .05, \delta_{3, \text{main}} = -.095, p < .01$) and utilities ($\delta_{4, \text{ini}} = -.130, p < .01, \delta_{4, \text{main}} = -.112, p < .05$; $\delta_{4, \text{ret}} = -.130, p < .05$) show significant effects for all aspects, customer heterogeneity significantly influences only maintenance performance ($\delta_{1, \text{main}} = .132, p < .05$).

4 Managerial implications

Several interesting insights and managerial indications can be derived from our findings and help address management's common misconceptions. First, the results for the main effects indicate that it is not sufficient to merely implement CRM activities of an organizational and/or technological nature and hope for direct effects on the acquisition, maintenance, or retention of customer relationships. This result is in line with Reinartz et al. (2004), and it makes sense, considering that it controls for the existence of technological and organizational implementations but not for their adequate support from within the company. The interaction effects show how influential internal support is: we find that appropriate organizational structures and motivated, well-trained sales personnel do in fact affect performance if managerial support for CRM exists. In line with Jayachandran et al. (2005), we find that the performance of technological implementation is moderated by its users' support. The interaction effects indicate that CRM

implementation efforts need support from both the management and employee levels; they cannot merely be “bought off the shelf.” This shows that implementing CRM involves not only processes but also people. Hence, we provide empirical evidence for Payne and Frow’s (2005, p. 168) definition of CRM, concluding that successful CRM implementations require processes, people, operations, and marketing capabilities that are cross-functionally integrated and enabled through information, technology, and applications. We believe that this finding demonstrates that successful CRM projects are dependent on support within the companies and, hence, need to involve employees and management intensively in the implementation process.

Second, the majority of CRM implementations fall short in comparison with the expectations that precede them (Rigby et al., 2002; Zablah et al., 2004; CSO Insights, 2006). Our results indicate that CRM implementations are not capable of serving customer initiation, maintenance, and retention in the same way. In order to avoid overly high expectations and resulting discontent, companies should carefully consider for which aspects CRM implementations may be efficient. For example, we find that the organizational implementation by management support interaction only has a significant effect on initiation performance—implying that even though management may support CRM appropriately, changes in organizational structures have no effect on the maintenance and retention of customer relationships. This may be due to the fact that many companies still emphasize acquiring new customers over developing existing customer relationships. Consequently, management aligns employee training and incentives accordingly. Both should nevertheless be able to affect performance at a later stage in the process as well if, for example, they direct employee efforts toward maximizing customer satisfaction, thus reducing customer migration and increasing the total return per customer.

Furthermore, technological implementations and their usage only affect initiation and maintenance performance. Considering the coefficients, the role of technological implementation

across the CRM process remains quite constant. Hence, we find that the systems and information used to acquire new customers work as well as those employed for the purpose of cross- and up-selling activities. Interestingly, in terms of both maintaining and retaining customer relationships, employee support as a main effect has a significant impact on performance. Apparently, one does not need the most sophisticated technological systems to perform successfully; the majority of companies in our sample operate with one-dimensional models for customer evaluation (e.g., customer satisfaction analyses) using socio-demographic characteristics to distinguish between their customers.

The finding that neither technological nor organizational forms of implementation are able to fulfill all CRM process-related objectives gives companies an indication of what to expect from CRM projects: whereas companies whose customer portfolio management strategy focuses on initiating customer relationships may well be advised to allocate their CRM investments to technological and (especially) organizational implementations, those investments would produce no effect on customer retention (even given appropriate internal support).

We believe these findings show that firms should neither underestimate the influence of employee and management support on CRM performance nor overestimate the potential of CRM implementations. This knowledge can be used to advance CRM implementations—not only with regard to process-related aspects but also considering industry specifics. This is necessary because, as the results show, CRM performance differs substantially by industry.

5 Conclusion and limitations

This paper contributes to the existing literature on customer relationship management by providing insights into how to judge the performance of CRM projects, as well as by furnishing explanations for perceived failures. Even though numerous studies have investigated several

drivers of CRM performance, little knowledge has existed as to whether CRM implementations actually meet their objectives of initiating, maintaining, and retaining customer relationships. In this article, we have *i)* developed a conceptual framework that incorporates practically relevant CRM processes (i.e., organizational and technological implementations) as well as their interactions with people-related support activities and performance for all aspects of the CRM process; *ii)* empirically tested that framework; and *iii)* found out how technological and organizational implementations affect performance, and how this effect is moderated by management and employee support.

The study provides novel insights in three respects. First, the use of performance measures that capture the objectives of each aspect of the CRM process provides a much more detailed picture of what CRM implementations are achieving by identifying which CRM objectives are actually met using the implementations. Second, we show what one may realistically expect from CRM implementations and, therefore, indicate where investments in CRM should be allocated. Third, the interaction effects between CRM implementations and management and employee show that CRM implementation cannot merely be “bought off the shelf” but that it needs to be actively supported within the company.

However, some limitations should be kept in mind. First, given that this study was composed of only 90 observations, additional empirical research is necessary to support the results presented in this paper and to test their generalizability. Second, the fact that CRM implementations in the financial services industry yield far better performance than those in any other industry indicates that it is necessary to focus on specific industries. As neither levels of implementations nor support activities differ substantially across industries, further research should explore success factors on company or industry levels and refine the measures and scales used. Third, it should be kept in mind that the implementation of CRM is a dynamic process.

Since we have only captured data at a single point in time, future research should focus on analyzing CRM from a longitudinal perspective rather than a cross-sectional one.

References

- Achrol, R.S., & Stern, L.W. (1988). Environmental Determinants of Decision-Making Uncertainty in Marketing Channels. *Journal of Marketing Research*, 25(1), 36-50.
- Ahearne, M., Hughes, D.E., & Schillewaert, N. (2007). Why sales reps should welcome information technology: Measuring the impact of CRM-based IT on sales effectiveness. *International Journal of Research in Marketing*, 24(4), 336-49.
- Ahearne, M., Jones, E., Rapp, A., & Mathieu, J. (2008). High Touch Through High Tech: The Impact of Salesperson Technology Usage on Sales Performance via Mediating Mechanisms. *Management Science*, 54(4), 671-85.
- Ailawadi, K.L., Dant, R.P., & Grewal, D. (2004). *The Difference Between Perceptual and Objective Performance Measures: An Empirical Analysis*. Cambridge: Marketing Science Institute.
- Auh, S., & Menguc, B. (2005). The influence of top management team functional diversity on strategic orientations: The moderating role of environmental turbulence and intern functional coordination. *International Journal of Research in Marketing*, 22(3), 333-50.
- Bagozzi, R.P., & Yi, Y. (1988). On the Evaluation of Structural Equation Models. *Journal of the Academy of Marketing Science*, 16(1), 74.
- Batistlam, E.P., Denizel, M., & Filiztekin, A. (2007). Empirical validation and comparison of models for customer base analysis. *International Journal of Research in Marketing*, 24(3), 201-09.
- Bell, D., Deighton, J., Reinartz, W.J., Rust, R.T., & Swartz, G. (2002). Seven Barriers to Customer Equity Management. *Journal of Service Research*, 5(1), 77-86.

- Bergkvist, L., & Rossiter, J.R. (2007). The Predictive Validity of Multiple-Item Versus Single-Item Measures of the Same Constructs. *Journal of Marketing Research*, 44(2), 175-84.
- Bohling, T., Bowman, D., Lavalle, S., Mittal, V., Narayandas, D., Ramani, G., & Varadarajan, R. (2006). CRM Implementation: Effectiveness Issues and Insights. *Journal of Service Research*, 9(2), 184-94.
- Boulding, W., Staelin, R., Ehret, M., & Johnston, W.J. (2005). A Customer Relationship Management Roadmap: What Is Known, Potential Pitfalls, and Where to Go. *Journal of Marketing*, 69(4), 155-66.
- Cao, Y., & Gruca, T.S. (2005). Reducing Adverse Selection Through Customer Relationship Management. *Journal of Marketing*, 69(4), 219-29.
- Chin, W.W. (1998). The Partial Least Squares Approach to Structural Equation Modeling. In G.A. Marcoulides (Ed.), *Modern Methods for Business Research*, 295-336. London: Lawrence Erlbaum.
- Chow, G.C. (1960). Tests of Equality between sets of coefficients in two linear regressions. *Econometrica*, 28(July), 591-605.
- Colgate, M.R., & Danaher, P.J. (2000). Implementing a Customer Relationship Strategy: The Asymmetric Impact of Poor Versus Excellent Execution. *Journal of the Academy of Marketing Science*, 28(3), 375-87.
- Croteau, A.-M., & Li, P. (2003). Critical Success Factors of CRM Technological Initiatives. *Canadian Journal of Administrative Sciences*, 20(1), 21-34.
- CSO Insights (2006). *Sales Performance Optimization - 2006 Survey Results and Analysis*. Boulder.

- Day, G.S. (1994). The Capabilities of Market-Driven Organizations. *Journal of Marketing*, 58(4), 37-52.
- Day, G.S., & Montgomery, D.B. (1999). Charting New Directions for Marketing. *Journal of Marketing*, 63(4), 3-13.
- Day, G.S., & Van den Bulte, C. (2002). *Superiority in Customer Relationship Management: Consequences for Competitive Advantage and Performance*. Cambridge: Marketing Science Institute.
- Devaraj, S., & Kohli, R. (2003). Performance Impacts of Information Technology: Is Actual Usage the Missing Link? *Management Science*, 49(3), 273-89.
- Dwyer, F.R., Schurr, P.H., & Oh, S. (1987). Developing Buyer-Seller Relationships. *Journal of Marketing*, 51(2), 11-27.
- Fornell, C., Johnson, M.D., Anderson, E.W., Cha, J., & Bryant, B.E. (1996). The American Customer Satisfaction Index: Nature, Purpose, and Findings. *Journal of Marketing*, 60(4), 7-18.
- Gartner Group (2003). CRM Success Lies in Strategy and Implementation, Not Software. Available at <http://www.gartner.com>.
- Gerbing, D.W., & Anderson, J.C. (1988). An Updated Paradigm for Scale Development Incorporating Unidimensionality and its Assessment. *Journal of Marketing Research*, 25(2), 186-92.
- Gustafsson, A., Johnson, M.D., & Roos, I. (2005). The Effects of Customer Satisfaction, Relationship Commitment Dimensions, and Triggers on Customer Retention. *Journal of Marketing*, 69(4), 210-18.
- Harman, H.H. (1967). *Modern Factor Analysis*. Chicago: University of Chicago Press.

- Hitt, L.M., & Brynjolfsson, E. (1996). Productivity, Business Profitability, and Consumer Surplus: Three Different Measures of Information Technology Value. *MIS Quarterly*, 20(2), 121-42.
- Im, S., & Nakata, C. (2008). Crafting an environment to foster integration in new product teams. *International Journal of Research in Marketing*, 25(3), 164-72.
- Jarvenpaa, S.L., & Ives, B. (1991). Executive Involvement and Participation in the Management of Information Technology. *MIS Quarterly*, 15(2), 205-27.
- Jaworski, B.J., & Kohli, A.K. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing*, 57(3), 53-70.
- Jayachandran, S., Sharma, S., Kaufman, P., & Raman, P. (2005). The Role of Relational Information Processes and Technology Use in Customer Relationship Management. *Journal of Marketing*, 69(4), 177-92.
- Kamakura, W.A., Wedel, M., de Rosa, F., & Mazzon, J.A. (2003). Cross-selling through database marketing: a mixed data factor analyzer for data augmentation and prediction. *International Journal of Research in Marketing*, 20(1), 45.
- Kim, J., Suh, E., & Hwang, H. (2003). A Model for Evaluating the Effectiveness of CRM Using the Balanced Scorecard. *Journal of Interactive Marketing*, 17(2), 5-19.
- Kohli, A.K., & Jaworski, B.J. (1990). Market Orientation: The Construct, Research Propositions, and Managerial Implications. *Journal of Marketing*, 54(2), 1-18.
- Kumar, V., Lemon, K.N., & Parasuraman, A. (2006). Managing Customers for Value: An Overview and Research Agenda. *Journal of Service Research*, 9(2), 87-94.

- Lehmann, D.R. (2004). Linking Marketing to Financial Performance and Firm Value. *Journal of Marketing*, 68(October), 73-75.
- Lindell, M.K., & Whitney, D.J. (2001). Accounting for Common Method Variance in Cross-Sectional Research Designs. *Journal of Applied Psychology*, 86(1), 114-21.
- Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To Parcel or Not to Parcel: Exploring the Question, Weighing the Merits. *Structural Equation Modeling*, 9(2), 151-73.
- Mahmood, M.A., Hall, L., & Swanberg, D.L. (2001). Factors Affecting Information Technology Usage: A Meta-Analysis of the Empirical Literature. *Journal of Organizational Computing*, 11(2), 107-30.
- Malhotra, N.K., Kim, S.S., & Patil, A. (2006). Common Method Variance in IS Research: A Comparison of Alternative Approaches and a Reanalysis of Past Research. *Management Science*, 52(12), 1865-83.
- Menon, N.M., Lee, B., & Eldenburg, L. (2000). Productivity of Information Systems in the Healthcare Industry. *Information Systems Research*, 11(1), 83-92.
- Mithas, S., Krishnan, M.S., & Fornell, C. (2005). Why Do Customer Relationship Management Applications Affect Customer Satisfaction? *Journal of Marketing*, 69(4), 201-09.
- Morgan, R.M., & Hunt, S.D. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, 58(3), 20-38.
- Narver, J.C., & Slater, S.F. (1990). The Effect of a Market Orientation on Business Profitability. *Journal of Marketing*, 54(4), 20-35.
- Nunnally, J.C. (1978). *Psychometric Theory*. New York et al.: McGraw-Hill.

- Palmatier, R.W., Scheer, L.K., Houston, M.B., Evans, K.R., & Gopalakrishna, S. (2007). Use of relationship marketing programs in building customer-salesperson and customer-firm relationships: Differential influences on financial outcomes. *International Journal of Research in Marketing*, 24(3), 210-23.
- Payne, A., & Frow, P. (2005). A Strategic Framework for Customer Relationship Management. *Journal of Marketing*, 69(4), 167-76.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.-Y., & Podsakoff, N.P. (2003). Common Method Biases in Behavioural Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Reinartz, W.J., Krafft, M., & Hoyer, W.D. (2004). The Customer Relationship Management Process: Its Measurement and Impact on Performance. *Journal of Marketing Research*, 41(3), 293-305.
- Rigby, D.K., Reichheld, F.F., & Schefter, P. (2002). Avoid the four Perils of CRM. *Harvard Business Review*, 80(2), 101-09.
- Ringle, C., Wende, S., & Will, A. (2005). Smart-PLS Version 2.0 M3. Available at <http://www.smartpls.de>.
- Rossiter, J.R. (2002). The C-OAR-SE procedure for scale development in marketing. *International Journal of Research in Marketing*, 19(4), 305-35.
- Rust, R.T., & Verhoef, P.C. (2005). Optimizing the Marketing Interventions Mix in Intermediate-Term CRM. *Marketing Science*, 24(3), 477-89.
- Sabherwal, R., Jeyaraj, A., & Chowa, C. (2006). Information System Success: Individual and Organizational Determinants. *Management Science*, 52(12), 1849-64.

- Schoder, D., & Madeja, N. (2004). Is Customer Relationship Management A Success Factor In Electronic Commerce? *Journal of Electronic Commerce Research*, 5(1), 38-53.
- Shah, D., Rust, R.T., Parasuraman, A., Staelin, R., & Day, G.S. (2006). The Path to Customer Centricity. *Journal of Service Research*, 9(2), 113-24.
- Simon, F., & Usunier, J.-C. (2007). Cognitive, demographic, and situational determinants of service customer preference for personnel-in-contact over self-service technology. *International Journal of Research in Marketing*, 24(2), 163-73.
- Sinkula, J.M., Baker, W.E., & Noordewier, T. (1997). A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behaviour. *Journal of the Academy of Marketing Science*, 25(4), 305-18.
- Slater, S.F., & Narver, J.C. (1995). Market Orientation and the Learning Organization. *Journal of Marketing*, 59(3), 63-74.
- Speier, C., & Venkatesh, V. (2002). The Hidden Minefields in the Adoption of Sales Force Automation Technologies. *Journal of Marketing*, 66(3), 98-111.
- Stefanou, C.J., Sarmaniotis, C., & Stafyla, A. (2003). CRM and Customer-Centric Knowledge Management: An Empirical Research. *Business Process Management*, 9(5), 617-34.
- Thomas, J.S., Blattberg, R.C., & Fox, E.J. (2004). Recapturing Lost Customers. *Journal of Marketing Research*, 41(1), 31-45.
- Zablah, A.R., Bellenger, D.N., & Johnston, W.J. (2004). An evaluation of divergent perspectives on customer relationship management: Towards a common understanding of an emerging phenomenon. *Industrial Marketing Management*, 33(6), 475-89.

Zahay, D., & Griffin, A. (2002). *Are Customer Information Systems Worth it? Results from B2B Services*. Cambridge: Marketing Science Institute.

Zahay, D., & Griffin, A. (2004). Customer Learning Processes, Strategy Selection, and Performance in Business-to-Business Service Firms. *Decision Sciences*, 35(2), 169-203.

TABLES AND FIGURES

Table 1
Sample statistics

Item	Percentage
<i>Company Size</i>	
– up to 499 employees	6.6
– 500 to 4,999 employees	44.5
– above 5,000 employees	48.9
<i>Industry</i>	
– Financial services	32.2
– Products and retail	34.5
– Communication and information technology	21.1
– Utilities	12.2
<i>Division responsible for CRM</i>	
– Top management	22.7
– Marketing and sales	64.8
– Services and CRM	6.8
– IT	5.7
<i>Responsibility of respondents</i>	
– Top management	17.9
– Marketing and sales	51.2
– Services and CRM	21.4
– IT	9.5

Note: N = 90.

Table 2
Correlations

	Mean (SD)	Performance			Main effects				Interactions		Controls			
		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Initiation performance	.15 (.14)	1.00												
2. Maintenance performance	.17 (.13)	.73***	1.00											
3. Retention performance	.19 (.17)	.48***	.63***	1.00										
4. Organizational implementation	.43 (.17)	.17 ^{ns}	.09 ^{ns}	.11 ^{ns}	1.00									
5. Technological implementation	.47 (.24)	.15 ^{ns}	.21**	.16 ^{ns}	-.03 ^{ns}	1.00								
6. Management support	.57 (.17)	.07 ^{ns}	.15 ^{ns}	.23**	.38***	.13 ^{ns}	1.00							
7. Employee support	.52 (.26)	.16 ^{ns}	.27***	.29***	.27**	.22**	.30***	1.00						
8. Organizational implementation x management support	.38 (.16)	.17 ^{ns}	-.02 ^{ns}	.05 ^{ns}	.07 ^{ns}	-.12 ^{ns}	-.25**	.09 ^{ns}	1.00					
9. Technological implementation x employee support	.58 (.16)	.11 ^{ns}	.17 ^{ns}	.04 ^{ns}	-.05 ^{ns}	.01 ^{ns}	-.00 ^{ns}	-.04 ^{ns}	-.12 ^{ns}	1.00				
10. Customer heterogeneity	.50 (.22)	.02 ^{ns}	.23 ^{ns}	.12 ^{ns}	-.00 ^{ns}	-.03 ^{ns}	-.10 ^{ns}	.15 ^{ns}	.06 ^{ns}	.03 ^{ns}	1.00			
11. Industry (retail)	.34 (.48)	.07 ^{ns}	-.12 ^{ns}	-.11 ^{ns}	-.06 ^{ns}	-.06 ^{ns}	-.09 ^{ns}	.04 ^{ns}	-.12 ^{ns}	-.07 ^{ns}	.12 ^{ns}	1.00		
12. Industry (IT)	.21 (.41)	-.11 ^{ns}	-.12 ^{ns}	.04 ^{ns}	-.08 ^{ns}	.01 ^{ns}	-.10 ^{ns}	-.07 ^{ns}	.20 ^{ns}	-.04 ^{ns}	.07 ^{ns}	-.37***	1.00	
13. Industry (utilities)	.12 (.33)	-.16 ^{ns}	-.14 ^{ns}	-.16 ^{ns}	-.01 ^{ns}	.03 ^{ns}	.07 ^{ns}	.00 ^{ns}	.03 ^{ns}	.13 ^{ns}	-.11 ^{ns}	-.27***	-.19*	1.00

Note: * $p < .1$, ** $p < .05$, *** $p < .01$, ^{ns} not significant, two-tailed significance levels; N = 90.

Table 3
Performance means

	Initiation performance			Maintenance performance			Retention performance		
	lower quantile	middle quantile	upper quantile	lower quantile	middle quantile	upper quantile	lower quantile	middle quantile	upper quantile
Technological implementation	.15 (.11)	.13 (.12)	.18 (.18)	.16 (.12)	.14 (.11)	.21 (.13)	.18 (.19)	.16 (.13)	.24 (.19)
Organizational implementation	.14 (.12)	.14 (.12)	.18 (.18)	.15 (.11)	.18 (.14)	.18 (.13)	.15 (.13)	.20 (.18)	.23 (.19)
Management support	.16 (.12)	.13 (.12)	.17 (.17)	.16 (.11)	.16 (.12)	.19 (.14)	.16 (.10)	.17 (.14)	.25 (.24)
Employee support	.14 (.12)	.16 (.15)	.16 (.15)	.14 (.12)	.17 (.12)	.20 (.13)	.14 (.14)	.20 (.16)	.24 (.20)

Note: Standard deviation in parentheses; performance was measured on a 0-100 scale.

Table 4
Results of the CRM process performance model

Parameter	Effects	Initiation performance		Maintenance performance		Retention performance		Chow test	
		Estimate	Std. Err.	Estimate	Std. Err.	Estimate	Std. Err.	F-Value	
α	Intercept	-.073 ^{ns}	.094	-.054 ^{ns}	.079	-.089 ^{ns}	.117		
	<i>Main effects</i>								
β_1	Technological implementation	H ₁	.093*	.056	.084*	.047	.072 ^{ns}	.070	1.836 ^{ns}
β_2	Organizational implementation	H ₂	.072 ^{ns}	.075	-.013 ^{ns}	.064	-.033 ^{ns}	.094	1.522 ^{ns}
β_3	Management support		.033 ^{ns}	.090	.057 ^{ns}	.076	.195*	.111	2.678*
β_4	Employee support		.027 ^{ns}	.056	.084*	.047	.128*	.070	2.866*
	<i>Interaction effects</i>								
γ_1	Organizational implementation x management support	H ₃	.216**	.089	.042 ^{ns}	.076	.108 ^{ns}	.112	1.330 ^{ns}
γ_2	Technological implementation x employee support	H ₄	.153*	.082	.160**	.069	.083 ^{ns}	.102	1.590 ^{ns}
	<i>Control</i>								
δ_1	Customer heterogeneity		.006 ^{ns}	.061	.132**	.051	.083 ^{ns}	.076	2.363*
δ_2	Industry (retail) ^a		-.057*	.032	-.082***	.027	-.067*	.040	.328 ^{ns}
δ_3	Industry (IT) ^a		-.097**	.037	-.095***	.031	-.035 ^{ns}	.047	1.890 ^{ns}
δ_4	Industry (utilities) ^a		-.130***	.044	-.112***	.038	-.130**	.055	.147 ^{ns}
<i>r-square</i>			.21		.30		.19		

Note: * p < .1, ** p < .05, *** p < .01, ^{ns} not significant, two-tailed significance levels; N = 90; ^a financial services served as reference category.

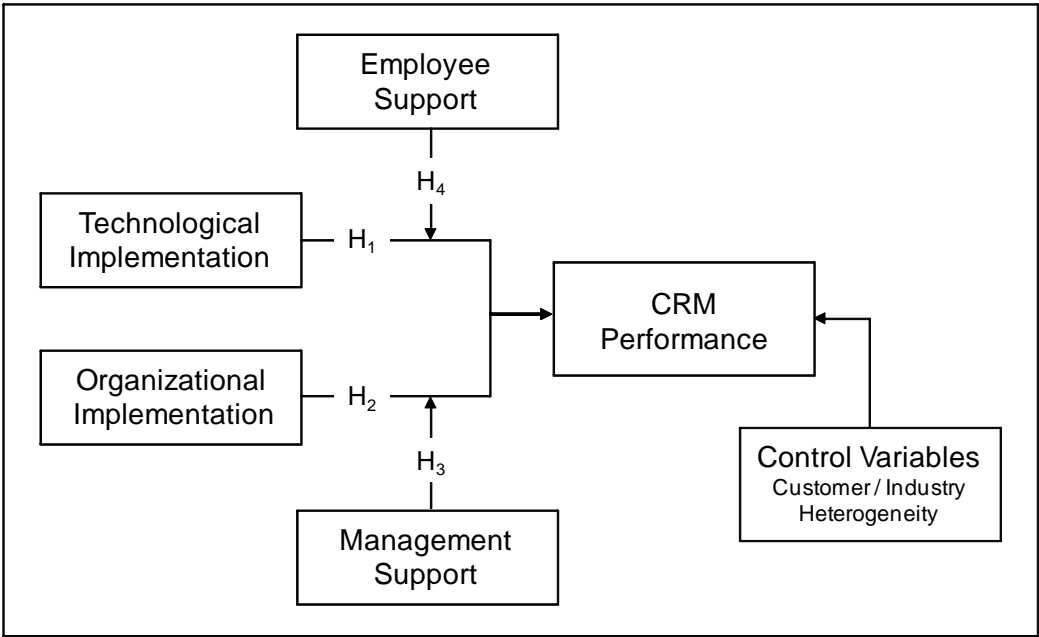


Fig. 1. Performance model of CRM implementations

Appendix A: Description of measures

Item	Mean*	Std. Dev.
<i>Initiation performance</i> ¹		
– Improvement of customer acquisition	18.67	17.47
– Improvement in regaining lost customers	12.17	15.20
<i>Maintenance performance</i> ¹		
– Improvement of customer satisfaction	20.12	15.38
– Improvement in the expansion of customer relationships	19.02	15.80
– Improvement of total return per customer	11.82	14.18
<i>Retention performance</i> ¹		
– Improvement in customer retention	24.86	21.58
– Reduction of customer migration	13.86	15.64
<i>Information acquisition</i> ²		
– We can gather customer information in real time over all distribution channels (telephone, sales, Internet...).	2.62	1.22
– We have a uniform customer database that integrates various information sources.	3.01	1.29
– We have a closed information circuit (closed-loop architecture) between information acquisition, forwarding, analysis and utilization.	2.62	1.22
– Our CRM system regularly and automatically updates the data contents.	2.96	1.54
<i>Information storage</i> ²		
– Profiles and other information on both existing as well as potential customers are stored and managed in a central database.	3.57	1.32
– External statistical and analytical research information (market / industry trends) is automatically used in operative systems.	2.07	1.15
– Our employees store important socio-demographic data (age, marital status, occupation, income) on existing and potential customers. ³	2.54	1.38
– Our employees store important psycho-graphical data (lifestyle, interests) on existing and potential customers. ³	1.97	1.15
– Our employees store information on buying patterns (dates, products, quantity). ³	3.20	1.50
– Our employees store important contact information (who was contacted, when and how). ³	3.48	1.28
– Our employees store reaction data (reaction date, purchase date, complaints). ³	2.93	1.32

Item (<i>continued</i>)	Mean	Std. Dev.
<i>Information accessibility</i> ²		
– Important customer data are equally accessible to Marketing, Distribution and Service.	3.54	1.11
– Employees with direct customer contact have detailed customer data for taking decisions.	3.70	1.17
– Customer-relevant data can be forwarded at any time to the employees concerned.	3.77	1.12
– Divisions with customer contact (Marketing, Distribution, Service) have quick and flexible access to customer data.	3.52	1.14
<i>Information evaluation</i> ²		
– We use one-dimensional non-economic customer evaluation models (customer satisfaction analyses, frequency of purchase analyses). ³	3.46	1.25
– We evaluate the product perception of our customers and potential customers. ³	3.13	1.23
– Behavior patterns and forecasts are developed with data mining (loyalty, potential, risk, purchase and behavior probabilities). ³	2.32	1.44
– We analyze customer data in order to determine probable behaviour and preferences of our customer groups (predictive modeling). ³	2.53	1.41
<i>Organizational structure</i> ²		
– We have an organizational structure that is based on customer segments (e.g., customer segments as profit centre).	3.37	1.41
– Our distribution is organized according to customer groups (segment-based).	3.61	1.46
– Our organizational structure supports sharing critical information between individual customer-related divisions (marketing, distribution, service) for the successful implementation of CRM.	3.42	.97
– We have reorganized areas of responsibility and expertise in order to ensure that our employees can advise customers on an individual basis.	3.49	1.04
<i>Employee training</i> ²		
– Employees have received intensive training for using CRM functions. ³	3.38	1.19
– Employees in the relevant divisions (Marketing, Service, Distribution) know how to use CRM in daily work. ³	3.43	1.05
– Regular investments are made in the development of employee CRM skills. ³	3.20	1.16
– Development of CRM skills is of high priority in the training plan of the employees. ³	2.99	1.18
<i>Employee incentives</i> ²		
– Employees who acquire customer data and use CRM analysis results are given material incentives (e.g., raises). ³	1.83	.96
– Employees who acquire customer data and use CRM analysis results are given non-material incentives (e.g., promotions). ³	2.19	1.10

Item (<i>continued</i>)	Mean*	Std. Dev.
<i>CRM orientation</i> ²		
– CRM is a major part of our business strategy.	3.86	1.05
– The goal of our business is the fulfillment of customer requests	4.22	.97
– Comprehensive knowledge of our customer needs is our competitive advantage.	3.94	1.05
<i>Management commitment</i> ²		
– Top management informs the employees regularly about high customer orientation.	3.99	1.00
– Top management motivates the employees to live the CRM vision.	3.44	1.14
– Top management is involved to a large degree in CRM implementation and entrusted with it.	3.36	1.15
– Top management intensively communicates the CRM vision internally and externally.	3.22	1.13
<i>Employee support</i> ¹		
– Our different CRM application components are used at a capacity of x percent.	52.18	22.20
– Customer-relevant information that our CRM application components generate are used at x percent for supporting customer-related activities.	54.26	25.34
<i>Customer heterogeneity</i> ²		
– Socio-demographic characteristics (income, occupation, education)	2.11	1.15
– Product preferences (product features)	2.58	1.09
– Price/performance expectations	2.93	1.16
– Loyalty	2.79	1.02
– Service demands	2.67	1.17

Note: ¹ Percentage of improvement since implementation of CRM; ² five-point Likert scale, anchored by 1 = “totally disagree” and 5 = “totally agree”; ³ items form aggregate-level indicator (mean), N = 90.

Appendix B: Results of the structural equation models

Construct	r-square	Weights	t-value
<i>Organizational implementation</i>	.40		
– Organizational structure		.423	4.900
– Employee training		.288	2.915
– Employee incentives		.025	.256
<i>Technological implementation</i>	.39		
– Information acquisition		.516	3.911
– Information storage		.044	.417
– Information accessibility		.088	.685
– Information evaluation		.042	.526
<i>Management support</i>	.23		
– CRM orientation		.218	1.963
– Management commitment		.331	3.262

Note: N = 90.