

**Measuring the Customer Relationship  
Management Construct and Linking it  
to Performance Outcomes**

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**W. Reinartz  
M. Krafft  
and  
W. Hoyer**

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Werner Reinartz, Manfred Krafft, and Wayne D. Hoyer

Werner J. Reinartz is Assistant Professor of Marketing at INSEAD, Boulevard de Constance, F-77305 Fontainebleau Cedex, France, Phone +33-1-6071-2648, Fax +33-1-6074-5000, E-mail [werner.reinartz@insead.edu](mailto:werner.reinartz@insead.edu)

Manfred Krafft is The Otto Beisheim Endowed Professor and Chair of Marketing, and Director of the Center for Market-Oriented Management at WHU (Koblenz Graduate School of Management), Burgplatz 2, D-56179 Vallendar, Germany, Phone +49 (261) 6509 441, Fax +49 (261) 6509 449, Email [krafft@whu.edu](mailto:krafft@whu.edu)

Wayne D. Hoyer is the James L. Bayless/William S. Farish Fund Chair for Free Enterprise and Chairman, Department of Marketing, McCombs School of Business, University of Texas at Austin, Austin, Texas 78712 – 1176, Phone +1 (512) 471 1128, Fax +1 (512) 471 1034, Email: [wayne.hoyer@bus.utexas.edu](mailto:wayne.hoyer@bus.utexas.edu)

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# **Measuring the Customer Relationship Management Construct and Linking it to Performance Outcomes**

## **Abstract**

Understanding how to effectively manage relationships with customers has become a very important topic to both academicians and practitioners in recent years. As a result, deploying strategic customer relationship management (CRM) initiatives has become very common. Yet, the existing academic literature and the practical applications of CRM strategies do not provide a clear indication of specifically what constitutes CRM implementation. In this study, we attempt to (a) conceptualize a construct of CRM implementation, (b) operationalize and validate this construct, and (c) empirically investigate the organizational performance consequences of implementing CRM. Our research questions are addressed in two cross-sectional studies across four different industries and three countries. Our first key outcome is a theoretically sound CRM Implementation measure. Our second key result is the finding that CRM Implementation has a moderate positive impact on a firm's market performance which in turn is associated with better economic performance. The link between CRM Implementation and market-based performance is subject to moderating factors such as a company's ability to create CRM compatible incentivization schemes.

## **Measuring the Customer Relationship Management Construct and Linking it to Performance Outcomes**

Understanding how to effectively manage relationships with customers has become a very important topic to both academicians and practitioners in recent years. Organizations are starting to recognize the implications of customer value heterogeneity (Day 2000) and to align their offerings and communications strategy accordingly. We have therefore reached the point where organizations are in essence, moving away from product or brand-centered marketing towards a customer-centered approach.

In the quest to become a customer-centric organization, firms have invested heavily in technological solutions which are supposed to put their customer relationship management strategies into practice. For example, according to IDC (2000), CRM related investments amounted to \$3.3 billion in 1999 and were forecasted to grow 33 percent compounded annually to \$10.2 billion in 2003.

On the academic side, the interest in customer management related research topics is now starting to surge. For example, the Marketing Science Institute (MSI 2000) has designated customer relationship management as one of the top priority research topics and special tracks devoted to this topic have been appearing more frequently at major academic conferences..

However, despite this seemingly promising future, some key problems need to be addressed. While the conceptual underpinnings of a customer relationship management strategy are hardly questioned, the implementation challenges appear to be enormous. Commercial market research studies are the first that provide evidence of severe implementation difficulties of customer relationship management strategies. These studies provide some convergent validity that about 70% of customer relationship management projects result in either losses or in no bottom line improvement in company performance.

Despite the fact that CRM represents an extremely important research priority for the near future, very little academic empirical research can be currently found. Day (2000) speculates that while technological aspects of CRM are important, they are no substitute for focusing attention on boundary spanning activities such as customer sensing or on the proper internal configuration of functions and activities. Other studies have focused on components of a CRM strategy such as the link between loyalty and profitability (Reinartz and Kumar 2000), profitability heterogeneity (Niraj, Gupta, and Narasimhan 2001), and word-of-mouth effects (Bowman and Narayandas 2001). However, there is a severe lack of research which attempts to take a broader, strategic focus across firms. Thus, there is no clear evidence regarding the characteristics of successful CRM approaches nor why CRM strategies fail.

Even before one assesses the performance consequences, however, marketers need to delineate and understand the key components of a CRM strategy. Both the existing academic literature and practical applications of CRM strategies do not provide a clear indication of specifically what constitutes CRM implementation. As mentioned above, some view CRM primarily as investing in technology and software, while others treat CRM more expansively and are aggressive in developing sound and productive relationships with customers. Further, some companies have implemented a CRM strategy to a greater degree than others. It is therefore important to identify the types of CRM activities which can be employed and how these might relate to company performance and profitability.

Thus, the key contribution of the current paper is to conceptualize and operationalize a measure of the degree of CRM implementation. In doing so, we will first identify the key stages of CRM implementation. These stages will serve as a meaningful and practical way of organizing the different CRM-related activities. We will then specify the key activities which should occur at each stage of implementation. Our intent is to be as comprehensive as possible in the documenting of

these activities. In particular, there is an interest in understanding what functional, organizational, and strategic competencies are necessary to conduct effective and profitable CRM activities. This topic is very critical to managers who have made customers the key focus of their marketing strategy.

Developing such a measure or index of CRM implementation will then allow us to examine how the extent of CRM implementation contributes to company performance. Specifically we focus on the research question of whether higher levels of CRM implementation are associated with better market performance (i.e., in terms of customer satisfaction, retention, company image and customer benefit) and whether this then results in improved economic performance. We further examine the conditions under which CRM implementation is associated with superior performance outcomes (i.e., what are the moderators of this relationship?).

### **Theoretical Foundation of Degree of CRM Implementation**

A key theoretical basis for CRM research is the relationship marketing literature. In this area it is theoretically held that building and managing ongoing customer relationships delivers the essence of the marketing concept (Webster 1992; Morgan and Hunt 1994). This is based on the notion that customer-firm interactions range on a continuum which is anchored by a purely transactional to a purely relational exchange (Dwyer, Schurr and Oh 1987; Mc Neil 1980). Between these two extremes are relationships with different degrees of intensity and characteristics.

The reason as to why it is important for firms to engage in relationship building comes from two distinct, yet related theoretical approaches. The behavioral perspective of relationships maintains that desirable behavioral outcomes (such as retention or behavioral loyalty) are a result of underlying psychological processes (such as satisfaction, commitment, or trust) (Morgan and Hunt 1994; Bolton 1998). These outcomes can be achieved by managing this psychological process

through relationship building activities. The second theoretical basis, the new institutional economics approach, uses economic theory to explain the development and breakdown of customer-firm relationships. Both transaction cost theory (Rindfleisch and Heide 1997) and agency theory (Mishra, Heide and Cort 1998) focus on minimizing the cost of structuring and managing relationships while maximizing the returns from them.

Common to all theoretical approaches in the relationship marketing literature is that managing relationships is beneficial for the firm. This perspective has received preliminary support from the findings of Reichheld and Teal (1996) which anecdotally illustrated the economic superiority of the relationship marketing approach. However, these observations have been substantially tempered recently by new empirical evidence (e.g., Reinartz and Kumar 2000; Niraj, Gupta and Narasimhan 2001) which stresses the importance of moderating effects. Thus, it is probably not true that more relationship building is always better but rather, that building the *right* type of relationship (depending on the situational factors) is critical. In other words, facilitators such as organizational design, adequate incentive schemes, and IT resources as well as industry, company, or customer structures may affect the performance of relationship marketing activities.

Another important concept that has a bearing on our discussion is the integration of marketing into the fabric of the entire organization. Marketing in this sense is broadly defined as all product and information exchange with the customer base. Since relationship management deals to a large extent with learning about customers' desires through ongoing transactions over time, one objective of relationship management is to make this learning impact on most, if not all internal processes, such as for example new product development or supply chain management (Iansiti and Clark 1994; Srivastava, Shervani, and Fahey 1998). Thus, CRM has not only an impact on external relationships but also to a large degree on internal configurations. For example, the supply chain impact of CRM entails shifting from a focus on obtaining the functionally best inputs at the

cheapest possible prices to managing and integrating the firm's own supply chain with that of both suppliers and customers (i.e., the principle of Efficient Consumer Response). The overall implication is that any attempt to define or measure CRM activities must include instruments that address both external as well as internal aspects.

In line with current conceptualizations, CRM is viewed as a macro-process that entails distinct components. Our conceptualization is in line with Srivastava, Shervani and Fahey (1998) who note that specific sub-processes exist within the CRM process. We want to highlight first the two core dimensions of the macro-process: (a) the customer lifetime duration dimension (i.e., customer lifecycle) and (b) the management interaction dimension (see also Figure 1).

The first key dimension, the customer lifetime duration dimension, reflects the fact that customers are prospected, acquired, retained, and matured. This process of relationship building and nurturing can be subject to termination at any point through customer causes (ceasing of category consumption), competitive causes, or through internally unintended (attrition through service problems) or internally intended causes (customer firing). While there is little empirical evidence on the nature of the customer lifecycle (for an exception see Kamakura, Ramaswami, and Srivastava 1991), the entire relationship marketing concept is based on the conceptual notion of a customer-firm interaction that evolves over time (Dwyer, Schurr, and Oh 1987). In accordance with this phenomenon of customer lifecycles, we conceptually separate the customer lifetime dimension into the following six components: acquisition management, regain management, retention management, up-sell/cross-sell management, referral management, and exit management. Each construct has been dealt with to a larger or smaller extent in the literature. Some recent work has also attempted to integrate different components (Blattberg, Getz, and Thomas 2001) to include the longitudinal dynamic properties of the CRM construct.



The second key dimension of our CRM macro-process is the management dimension. That is, contingent upon every stage in the customer lifecycle, the firm engages in a specific exchange process which entails two key sub-processes: customer evaluation (“understanding”) and customer-firm interaction (“influencing”). The key idea is that the exchange process is different for different tiers of customers, where the customer tier membership depends on the economic value of that customer or segment to the firm (Day 2000).

These dimensions provide a structure for different CRM-related activities and serve as the basis for a conceptual framework for the CRM Implementation construct. Figure 1 summarizes the constituents of this framework. We define the customer management macro-process as the systematic process of identifying customers for acquisition and retention purposes. Specifically, this involves relationship (re-)initiation (acquisition and regain management), maintenance (retention, up-sell / cross-sell, and referral management), and possibly termination (exit management) with a selected group of customers or segments of customers. Each of these sub-processes involves a set of distinct management activities in terms of customer evaluation and customer interaction. The interaction sub-processes are covered by the six management components, and for each of the three lifecycle stages we identify a set of evaluation activities. We consider these 9 constructs to be formative, i.e. to consist of explanatory combinations of indicators that cover the distinct activities involved (Fornell and Bookstein 1982). This leads to a preliminary set of (formative) indicators of these 9 factors. In Figure 1, the horizontal dimension reflects the customer lifetime dimension, whereas the individual boxes reflect the customer evaluation and customer-firm interaction activities (i.e. the management dimension).

**[Figure 1 approximately here]**

### **A Model of the Performance Outcomes of CRM Implementation**

Adopting and implementing CRM practices and principles is only one part of the equation. The other, even more important part is to establish whether it is “a good thing to do.” Given the dearth of sound empirical findings in the domain and the fact that evidence is now suggesting that CRM strategies may not be performing as well as many had expected, an investigation of the CRM Implementation-Performance link should be of great interest to managers and academics. A second goal of this paper, therefore, is to conceptualize and test a model of how the degree of CRM Implementation might be associated with organizational performance.

Figure 2 presents an overview of the theoretical model. In essence, there are two key components of this model. First, we investigate the main effect of CRM Implementation on firm performance. Second we examine moderating effects which may serve to establish some contingency conditions.

**[Figure 2 approximately here]**

In terms of performance outcomes, we make an important distinction between a firm’s market-based performance and its economic performance (Kohli and Jaworski 1990; Bharadwaj, Varadarajan, and Fahy 1993). Market-based performance relates the firm’s managerial actions (in this case CRM Implementation) to variables such as customer satisfaction (Fornell and Johnson 1996), customer retention (Day and Wensley 1988), and provision of customer benefits. Economic performance relates to more tangible measures such as market share, profitability, and customer account growth (Chakravarthy 1996). Although it is not yet very common to include economic measures as the ultimate dependent variable, there is a great need to investigate the link between marketing actions and economic performance, as is evidenced by the Marketing Science Institute Research Priorities (MSI 2000). In line with previous research we conceptualize a mediating effect of market-based performance (Day and Wensley 1988; Varadarajan and Jayachandran 1999;

Homburg, Hoyer, and Fassnacht 2002). In other words, we expect that CRM Implementation has an indirect effect on economic performance via market-based performance.

Regarding the contingencies of the CRM Implementation-Performance link, we suggest a number of moderating variables that are of interest to managers and that may either enhance or weaken the focal link. Supply-side characteristics would include CRM compatible incentivization (i.e., training procedures, rewards, and organizational structure), CRM Technology (i.e., investments in technology and one-to-one communication capabilities), and Distribution Channel Intensity (i.e., the number of channels and how heavily they are used). A demand-side characteristic would be Customer Heterogeneity (i.e., how similar or different consumers are on a variety of characteristics). Finally, the specification of our model controls for the types of industries investigated.

### **Hypothesis Development:**

*Effects on Market-based Performance:* CRM implementation refers to the intensity of CRM deployment in an organization. The rationale behind the conceptualization of the construct has already been explained. The reasoning is that as firms become more focused on building strong relationships with customers, they are able to more effectively understand customer needs and preferences. As they translate this knowledge into specific relationship building actions, (which are likely to be aligned with the customer's values and desires), these activities should result in higher customer satisfaction, higher value provided to the customer, and subsequently higher customer retention.

Having a high degree of CRM Implementation means that firms are able to adjust their interactions according to the lifecycle stages of their customers and that they may be able to influence these stages actively (e.g., maturing or extending relationships (Zeithaml, Rust, and

Lemon 2001)). The goal of these activities is to align the resources spent on the customers with the revenues/profits derived from those same customers (Mulhern 1999). Managing this process well will therefore lead to a customer selection and matching process: customers will gravitate towards those firms that are able to serve them well. Firms will spend a disproportionate amount of resources on those customers that are highly profitable or that are worth the resource allocation, because they are “high potentials”. Furthermore, firms will economize on unprofitable or marginally profitable customers who then either may leave the relationship or who may build up their relationship with the focal firm. Given this matching process, one would expect greater satisfaction and retention across the customer base.<sup>1</sup> Therefore, we expect a significant and positive association between the degree of a firm’s customer management practices and the firm’s market-based success.

H1: The higher the degree of CRM Implementation, the higher the company performance in the market.

As mentioned previously, there are several factors which may moderate the relationship between CRM Implementation and market-based performance. These include: CRM compatible incentivization, CRM Technology, Customer Heterogeneity, and Distribution Channel Intensity.

*CRM Compatible Incentivization.* While there are concerns that the role of marketing might be on the decline (Reibstein 2001), opposite voices argue that the various corporate functional units have become more marketing-oriented precisely because marketing is so important (Day 1992). Therefore, as firms become able to align their organizations and structures with their market goals more effectively, one would expect them to be more successful in that market. Likewise, the view

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<sup>1</sup> A caveat is applicable. There will of course always be some heterogeneity in the customer base due to transactional customers who do not leave the relationship with the firm, in spite of possible dissatisfaction. This dissatisfaction might be brought about by the perceived “worse treatment” as opposed to heavy users (see for example Brady 2000). However, on average, we believe that most customers are more satisfied because of the more fair interaction.

that the marketing function is distinct and non-overlapping with other corporate functions has become mostly obsolete (Webster 1992; Homburg, Workman, and Krohmer 1999). Given that the marketing function constitutes the interface with the customer, there is an imperative to bring this interface deeper into the organization (Kohli and Jaworski 1990; Day and Montgomery 1999). Firms have begun doing so by using various approaches such as the deployment of cross-functional teams, particularly in new-product development, (Sethi, Smith, and Park 2001), the establishment of customer-oriented learning processes (Sinkula 1994), and the alignment of processes with customer needs and customer segments (Day 2000). A critical determinant of an organization's ability to influence market-goal and marketing-goal compatible activities and processes, is by choosing appropriate compensation schemes and organizational structures. The more these aspects support specific CRM-compatible behavior, the stronger should be the CRM Implementation-Market based performance link. In others words, if it is stressed to employees that CRM activities are important, the organization is structured to facilitate these activities, and employees are rewarded for engaging in CRM-related activities, the more likely they are to stress these activities in their interactions with customers.

H2: The greater the level of CRM compatible incentivization, the stronger the positive link between CRM Implementation and market-based performance.

*CRM Technology.* Another important moderator of the CRM Implementation-Market-based Performance link may be the degree to which a firm uses supporting information technology. In this context, CRM Technology is the information technology that is deployed for the specific purpose of better acquiring, maintaining and/or terminating customer relationships. The potential for information technology to constitute a sustainable competitive advantage has been amply discussed (Bharadwaj, Varadarajan, and Fahy 1993; Achrol 1991). We thus would expect that, ceteris paribus,

CRM Technology would function as a facilitator of CRM activities and thus contribute to better performance in the market. Nevertheless, this view should be tempered in light of the anecdotal evidence that exists with respect to CRM Technology. As mentioned previously, there is evidence that a large proportion of CRM Technology deployments do not perform to expectations (IDC 2000). However, there are likely to be multiple reasons for this (e.g., lack of defining objectives, lack of appropriate training procedures (Reinartz and Chugh 2002)) and this should not mean that the technology is at fault per se. Thus, we would still expect a positive moderating effect of CRM Technology.

H3: The greater the level of CRM technology, the stronger the positive link between CRM Implementation and market-based performance.

*Customer Heterogeneity.* One of the key reasons of deploying CRM initiatives is the recognition that consumers are increasingly heterogeneous (Weiner and Brown 1995) and that CRM is a means of alleviating the managerial problems associated with this heterogeneity (Hoekstra, Leeflang and Wittink 1999). While the more traditional view is that increased environmental uncertainty (which includes customer heterogeneity) makes marketing instruments less efficient (Achrol and Stern 1988), it is precisely the heterogeneous customer environment that CRM attempts to address and exploit. According to Duke Teradata Center's definition of CRM – CRM is an enterprise approach to understanding and influencing customer acquisition, customer retention, and customer value through *interactive relevant information exchange* [italics added] – it is the attempt to increasingly fine tune marketing actions on a more and more disaggregate level. Clearly, one would expect the payoffs from CRM initiatives to substantiate when customer heterogeneity is high. If little or no heterogeneity exists, CRM would add little gains above and beyond traditional mass-

market approaches. Thus, we hypothesize that as the level of customer heterogeneity in markets increases, CRM initiatives should be particularly appropriate, therefore:

H4: The greater the level of customer heterogeneity, the stronger the positive link between CRM Implementation and market-based performance.

*Distribution Channel Intensity.* The strategy of serving customers via multiple channels has been gathering increasing attention (Kohli 2002, Sa Vinhas 2002). Multi-channel marketing is seen as a way to satisfy the diverse needs of customers, offering the right product, at the right time, at the right place (Moriarty and Moran 1990). According to Coughlan et al. (2001), an explosion in the use of multiple channels has been taken place to the point that it is the norm rather than the exception. At the same time, solid empirical evidence is surprisingly scarce on the performance outcomes of managing multiple channels. In our context we use a measure of channel intensity as the degree to which organizations use a number and degree of different channels (Corey, Cespedes, and Rangan 1989).

In the context of a CRM strategy one could argue that the CRM implementation- market-based performance link is stronger when firms provide both a greater number of channels, and offer greater channel intensity, given they offer a channel. In other words, intensely using a number of different channels offers a great variety of tools or consumer contact points which enhances the ability to manage and improve the relationship. We thus hypothesize that this should have a reinforcing effect on market-based performance. As firms are improving the implementation of their CRM activities, the effect on market-based performance should be stronger in the context of an intensive channel offering.

H5: The higher the distribution channel intensity, the stronger the positive link between CRM Implementation and market-based performance.

*Effects on Economic Performance:* In line with previous research we hypothesize a positive effect of market-based performance on economic performance (Day and Wensley 1988; Homburg, Hoyer, and Fassnacht 2002). More specifically, it has been found that customer satisfaction has a positive impact on firm success (Anderson, Fornell, and Lehmann 1994), and may have a positive impact on retention (Rust and Zahorik 1993). In principle, we suggest that CRM activities are associated with better economic performance of the firm – mediated by market success.

H6: The higher the company's performance in the market, the higher the economic performance of the company.

#### Control Variables

*Industry.* In order to control for the possibility of variance across different industries, the type of industry was entered as a control. This permits us to account for mean differences of market-based performance across industries.

Three additional variables are included to account for variance in the ultimate dependent variable, economic performance. These included CRM technology, Distribution Channel Intensity, and Distribution Channel Effectiveness. Further, industry dummy variables are also created to control for mean differences of economic performance across industries.

*CRM Technology.* We discussed already that CRM technology plays a key role in the context of leveraging CRM related activities and thus contributing to an improved organizational performance in the market. In spite of this strong conceptual support there is also the notion that investments in CRM related technology may be associated with lower economic performance. The evidence for this claim is coming mostly from practitioners' and commercial market research reports. For example, Gartner Group (2001) quotes that many CRM initiatives of large organizations entail investments of \$20-75 million. The view that CRM IT investments might lead



to lower economic performance is echoed by Day (2000). He suggests that while the cost aspects of CRM investment are evident, the revenue enhancing aspects are much less obvious. Overall, while there are conflicting arguments for the direction of the effect of CRM Technology on economic performance, it is important to include the variable as a control factor.

*Distribution Channel Intensity.* In the context of CRM implementation, a variable that is important to take into account when looking at economic performance is intensity of marketing channel usage. Previous research has looked at the drivers of more or less intensive marketing channel usage (Frazier and Lassar 1996). However, the evidence is less clear on the outcomes. In an empirical study on the performance of South-East Asian exporters, Chan (1992) finds no linear association between channel intensity and export performance. In deciding on the channel intensity with respect to economic performance, the firm's essential trade-off is between the benefit of more market coverage and the cost of higher levels of channel support and coordination. At low levels of channel intensity, increasing the intensity with which channels are deployed increases sales proportionally more than producing channel conflict. At high levels of channel intensity, cannibalization, coordination cost, and decreasing marginal performance may lead to overall lower economic performance (Bucklin, Thomas-Graham, and Webster 1997). In lieu of posing a directional hypothesis, we simply want to control for any potential of variance explanation due to distribution channel intensity.

*Distribution Channel Effectiveness.* Another important variable that may impact a firm's economic outcome in addition to CRM-related activities is the effectiveness with which the organization manages its distribution channels (Rosenbloom 1973). However, similar to channel intensity, studies have typically examined the antecedents of channel efficiency (Brickley and Dark 1987). Less frequently is this construct treated as a driver of organizational performance. Since the management of distribution channels is crucial in the context of CRM activities, the variable may

have an impact on economic performance. Since channel effectiveness is a measure of results to resources, specifically the ratio of net effectiveness to overhead (Coughlan et al. 2001), one would expect a positive association of channel effectiveness with economic performance.

## **Data**

In order to test our framework, we conducted a cross-sectional survey in three countries - Austria, Germany and Switzerland in the Fall of 2001. We limited our investigation to consumer markets, since business-to-business relationships are less channel-intensive, characterized by small numbers of customers as well as a strong reliance on salespeople as major means of communications between firms and clients. In our initial empirical work on CRM, we wanted to target a more diverse environment of multiple customer contact points which is characteristic of consumer markets. Based on literature reviews and pretest interviews, industries were selected based on characteristics such as having a large customer base, intensive usage of a variety of channels, professionalism in CRM activities, and market pressure to differentiate from the competition. Based on these characteristics, the following industries were identified as adequate targets: financial services, hospitality, online retailers, and power utilities.

Our data were obtained from a large-scale mail survey. A pretest of the questionnaire was performed on a small sample of marketing managers and CRM experts. Then, a second pre-test of the questionnaire was performed to assess the validity of the scales. The final questionnaire was sent to a sample of 1,015 companies, which was derived from industry associations' member lists. A personalized mailing was undertaken to the executives who were identified in pre-mailing telephone calls as responsible for CRM operations. Whenever possible, we asked potential respondents to give us their e-mail address and to fill out an electronic version of the questionnaire. In 72% of the cases, we received digital responses rather than traditional mail responses. Altogether,

214 responses were obtained, of which 211 were usable. To increase the response, we conducted follow-up telephone calls three weeks after the initial mailing. About 30 % of all contacted persons got the questionnaire again.

In order to gather firsthand information regarding the reasons for non-response, a telephone follow-up of non-respondents was undertaken. We found that in about 70% of the cases the main reason for non-response was the ineligibility of target respondents. Among eligible non-respondents, the key reasons for non-response were lack of time or company policy that prohibited the completion of any questionnaire, in about two out of three cases. The effective response rate came to 21.1%. This rate is still satisfactory, given that average top management survey response rates are in the range of 15% to 20% (Homburg, Workman, and Krohmer 1999; Menon et al. 1999).

In more than 75% of the cases, the questionnaire was filled out by CEOs and senior marketing or sales executives. These executives are also knowledgeable key informants about information concerning CRM design since they are directing entities which in most cases are responsible for CRM activities. The unit of analysis is the strategic business unit.

### **Item Measurement and Index Construction**

As mentioned earlier, the key goal of the present study was to develop a comprehensive operationalization of the CRM Implementation construct. To achieve this goal, scales and measurement items for the study were developed as follows (scale and measurement items used in the study are provided in the appendix). Generally speaking, latent variables with multiple items can be operationalized in a reflective or a formative manner. The choice of a formative versus a reflective specification depends on the causal priority between the indicator and the latent construct (Bollen 1989). According to Fornell and Bookstein (1982, p. 292), “constructs such as “personality” or “attitude” are typically viewed as underlying factors that give rise to something that is observed.

Their indicators tend to be realized, then as reflective. On the other hand, when constructs are conceived as explanatory combinations of indicators (such as “population change” or “marketing mix”) that are determined by a combination of variables, their indicators should be formative.” Thus, when indicators of a construct present unique aspects of the construct, the construct should be viewed as a sum or a composite of the individual indicators (Bagozzi 1994). All of our constructs employed reflect such a composite across different, unique sources and are therefore operationalized effectively in a formative way (Howell 1987). We followed the guidelines for constructing indices based on formative indicators as proposed by Diamantopoulos and Winklhofer (2001). They identify four issues critical for successfully constructing indices with formative indicators: (a) content specification, (b) indicator specification, (c) indicator collinearity, and (d) external validity. Our focal independent variable is CRM Implementation. To exemplify how we proceeded to construct valid indices with formative indicators, we will refer to this key construct.

*Content Specification.* We develop a new formative, multi-item scale of CRM Implementation that captures the three lifetime stages of customer relationships, i.e. (re-) initiating, maintaining, and possibly terminating company-client relationships. More precisely, on the construct level, we define the domain of CRM Implementation as covering the activities of acquisition management and regain management at the initiation stage, retention management, up-sell/cross-sell management, and referral management at the maintenance stage, and termination management at the final stage of the customer relationship. On the construct level, we also capture activities of evaluating customers at each of the three lifetime stages, leading to nine CRM Implementation sub-factors on the construct level. These sub-factors represent latent constructs that reflect the presence or absence of CRM activities. We also intend to establish two higher-level indices that express the total degree of CRM activities at the three stages of customer lifecycles (initiating, maintaining, and terminating -- Level 1) and the overall degree of CRM Implementation

(Level 2). Thus, in our content specification, we seek to capture major facets of evaluation and management activities along customer-company relationships. A justification for this content specification has been given in the previous section on “Theoretical Foundation of Degree of CRM Implementation”.

*Indicator Specification.* Critical for the design of valid indices with formative indicators is the choice of items, since the indicators must capture the entire scope of the latent construct as described above. Based on an extensive review of relevant articles in academic journals (Journal of Marketing, Journal of Marketing Research, Marketing Science), the business press, as well as exploratory interviews with managers responsible for CRM systems, we identified 42 items that were evaluated by participants of pre-test interviews as capturing all major sub-processes in implementing CRM as a company strategy. These indicators are listed in the Appendix. A seven-point Likert format was used for scoring.

*Indicator Collinearity.* Since formative measurement models are based on linear equation systems (the formative indicators define the index of the latent variable), substantial collinearity among indicators would affect the stability of indicator coefficients. In our example, none of the 42 indicators of the nine CRM Implementation sub-factors revealed serious multicollinearity problems. The maximum variance inflation factor (VIF) came to 4.663, which is far below the common cut-off threshold of 10. The average VIF across the indicators of 1.99 also indicates that collinearity among the 42 indicators listed in the Appendix does not seem to pose a problem.

*External Validity.* The very nature of formative measurement renders irrelevant traditional assessments of convergent validity and individual item reliability (Hulland 1999, p. 201). However, this does not allow the researchers to arbitrarily link sets of items to constructs. Aside from strong theoretical foundations, researchers must assure that all indicators that form a construct are included. In order to test for external validity, Diamantopoulos and Winklhofer (2001) suggest to

include reflective indicators of the key construct and estimate a multiple indicators and multiple causes (MIMIC) model. In our example, we estimated a MIMIC model with our aggregate indices INITIATE, MAINTAIN, and TERMINATE, and their respective sub-factors and formative indicators. Four variables that capture the commitment of top management to implement CRM were used as reflective indicators of CRM Implementation.<sup>2</sup> The loadings of all four items turned out to be highly significant, with loadings of .861, .839, .729, and .802. Note, that the coefficients of the second-order factors measurement model (i.e., the path coefficients of the sub-factors on the three aggregate indices and the loadings of the formative indicators on the sub-factors) are not affected by including reflective indicators of CRM Implementation.

As described above, do we conceptualize CRM Implementation as a second-order factor measurement model. Second order factors can be approximated using various procedures. One of the easiest procedures to implement is the approach of repeated indicators known as the hierarchical component model suggested by Wold (Lohmöller 1989, pp. 130-133). In essence, a second order factor is directly measured by observed variables for all the first order factors. While this approach repeats the number of manifest variables used, the model can be estimated by the standard PLS algorithm.

The path coefficients between the three aggregate indices INITIATE, MAINTAIN, TERMINATE, and CRM Implementation are all highly significant and fall in the range of .442 (INITIATE), .537 (MAINTAIN), and .160 (TERMINATE).

*Discriminant Validity.* In addition to the four criteria described above, discriminant validity of CRM Implementation's sub-factors was estimated. This criterion estimates the extent to which

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<sup>2</sup> Two items were stated as “strongly disagree – strongly agree” 7 point Likert-scale formats (“CRM is a central aspect of our business strategy”, “CRM has become a top management issue in our SBU”), whereas the other two items were measured by the means of 7 point semantic scale formats (“With regard to your SBU, to what extent do each of the following activities represent a strength or weakness for you?” ... “The institutionalization of a CRM philosophy”, “Getting *top management* commitment to CRM”), anchored “major weakness” (1), “neither strength nor weakness” (4), and “major strength” (7).

measures of a given construct differ from measures of other constructs in the same model. In a PLS model, an adequate approach is to determine whether a construct shares more variance with its measures than it shares with other constructs in a given model (Hulland 1999). This can be achieved by comparing the square roots of the Average Variance Extracted (AVE) values (i.e. the average variance shared between a construct and its measures), and the correlations between different constructs.<sup>3</sup> For adequate discriminant validity, the diagonal elements should be substantially greater than the off-diagonal elements in the corresponding rows and columns (Fornell and Larcker 1981). This is the case for all sub-factors of our new CRM Implementation index, as our results in Table 1 depict.

**[Table 1 approximately here]**

*Nomological Validity.* Given that the formation of CRM Implementation as a new formative construct is a key objective of our study, we included 11 additional items in our survey. The items were measured by the means of 7 point semantic scale formats (“With regard to your SBU, to what extent do each of the following activities represent a strength or weakness for you?”), anchored “major weakness” (1), “neither strength nor weakness” (4), and “major strength” (7). These weakness/strength indicators covered evaluations by the respondents with regard to acquisition management, regain management, measurement at the maintaining stage, retention management, cross- and up-selling management, referral management, and activities to de-market customers. To check the nomological validity of our sub-factors and the three higher-level indices, we estimated the bivariate correlations between the sub-factors or indices and the respective independent weakness/ strength indicators.

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<sup>3</sup> In our case, the factor variance is set to 1. Then, the Average Variance Extracted (AVE) is defined as follows:  $AVE = \frac{\sum \lambda_i^2}{\{\sum \lambda_i^2 + \sum (1-\lambda_i^2)\}}$ .

Our formative index for acquisition management activities shows correlations of .363 and .399 with the independent strength/weakness items “Acquiring high value customers” and “Implementing systematic customer acquisition”, while our regain management index reveals a correlation of .353 with the statement “Regaining high value customers” as strength of the SBU. The index ‘measurement at the maintaining stage’ is significantly correlated with the variable “Understanding and determining the value of a customer” ( $\rho = .546$ ). Similar strong associations are observable between our retention management index, “Retaining high value customers” (.377) and “Building long-term relationships with our valued customers” (.322). Our index ‘management of up/cross-selling’ reveals even stronger correlations with the items “Implementing procedures for up-selling” (.503) and “Implementing procedures for cross-selling” (.507). Correlations of .358 (“Management of word-of-mouth”) and .469 (“Managing customer referrals”) emphasize that the index ‘customer referral management’ measures the degree of activities related to customer referrals. Since also the weakness/strength statement “Discontinuing relationships with low-value customers” is significantly correlated to the index ‘activities to de-market customers’ (.437), we can conclude that all our indices represent valid measures of the respective constructs.

For the regression analysis, the aggregate CRM Implementation index is constructed by weighted multiplication of the individual indicators with the standardized PLS weights, similar to the ACSI index (Fornell and Johnson 1996). The weights are given in Table 2.

**[Table 2 approximately here]**

The Appendix outlines the specific items used to assess each of the other key constructs. Market-Based Performance and Economic Performance are measured as formative, multi-item measures (adapted from Kohli and Jaworski, 1990, Desphandé, Farley and Webster, 1993), with four and five indicators respectively. CRM compatible incentivization is a formative, multi-item



measure with four indicators. CRM Technology is measured as a four-item formative scale. Customer Heterogeneity is a formative, multi-item measure with five indicators (adapted from Achrol and Stern, 1988). Distribution Channel Effectiveness is a single item scale. Distribution Channel Intensity is measured in terms of how strongly firms use their existing distribution channels. Besides measuring the intensity of usage it is also an implicit measure of number of channels used. Finally, Industry is measured via dummy variables. Table 3 lists the summary statistics for the measurement scales.

[Table 3 approximately here]

### Model Specification

The complete model specification is given in equations 1 and 2. Variables are grouped into main effects ( $\beta$ 's), interaction effects ( $\gamma$ 's) and control variables ( $\delta$ 's). The control variables in our system of equations are dummy variables for industry effects. In equation 2, we also control for effects by CRM Technology, Distribution Channel Intensity, and Distribution Channel Effectiveness.

$$\begin{aligned}
 \text{Market-based performance} = & \\
 & \alpha + \\
 & \beta_1 \text{ CRM Implementation} + \\
 & \beta_2 \text{ CRM Compatible Incentivization} + \\
 & \beta_3 \text{ CRM Technology} + \\
 & \beta_4 \text{ Customer Heterogeneity} + \\
 & \beta_5 \text{ Distribution Channel Intensity} + \\
 & \gamma_1 (\text{CRM Compatible Incentivization} \times \text{CRM Implementation}) + \\
 & \gamma_2 (\text{CRM Technology} \times \text{CRM Implementation}) + \\
 & \gamma_3 (\text{CRM Customer Heterogeneity} \times \text{CRM Implementation}) + \\
 & \gamma_4 (\text{CRM Distribution Channel Intensity} \times \text{CRM Implementation}) + \\
 & \delta_1 \text{ Industry 2} + \\
 & \delta_2 \text{ Industry 3} + \\
 & \delta_3 \text{ Industry 4} + \\
 & \varepsilon_1
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 \text{Economic performance} = & \\
 & \alpha + \\
 & \beta_6 \text{ Market-based performance} +
 \end{aligned}$$

$$\begin{aligned}
& \delta_4 \text{ CRM Technology} + \\
& \delta_5 \text{ Distribution Channel Intensity} + \\
& \delta_6 \text{ Distribution Channel Effectiveness} + \\
& \delta_7 \text{ Industry 2} + \\
& \delta_8 \text{ Industry 3} + \\
& \delta_9 \text{ Industry 4} + \\
& \varepsilon_2
\end{aligned} \tag{2}$$

We estimate the model in two steps in order to judge the incremental variance explained by adding the moderating effects and control variables. First, we model the effect of the core construct and control for industry effects (restricted model), then we add the interaction terms and the remaining control variables (full model).

### **Model Estimation**

The system of recursive equations described above was estimated using a three-stage least squares (3SLS) analysis. This approach leads to consistent and efficient parameter estimates since it takes error correlation into account (Judge et al. 1985). The first equation models Market Performance as the focal construct and the second equation models Economic Performance as the focal construct.

Since the natural collinearity between the interaction terms and the main effects in linear regression may lead to inflated standard errors, the interaction terms are entered as orthogonalized effects (Aiken and West 1991). This approach yields interaction variables that are uncorrelated with their component variables and we are thus able to assess the “true” effects of the interactions.

With respect to variance explained, traditional  $R^2$  measures cause a problem since they are not bounded between 0 and 1 in 3SLS. Carter and Nagar’s (1977) multiple-squared coefficient of correlation for simultaneous systems is used instead. It measures the percent of system-wide variation explained by all the independent variables in the system and is bounded between 0 and 1.

## Results

To investigate the mediating role of Market-based Performance between CRM Implementation and Economic Performance, we first assess the standard test for mediation (Baron and Kenny 1986), using a set of simple regressions. While Market-based performance has a positive and significant impact on Economic Performance, the impact of CRM Implementation on Economic Performance is positive but non-significant. However, when subjecting the CRM Implementation  $\rightarrow$  Market-based Performance  $\rightarrow$  Economic Performance chain to 3SLS procedures, the results show that CRM Implementation makes a significant contribution to Market-based Performance (Table 3, restricted model,  $\beta_1 = .0327$ ;  $p < 0.01$ ) which in turn impacts on Economic Performance (Table 3, restricted model,  $\beta_6 = 1.1431$ ;  $p < 0.01$ ). Therefore, the mediating hypothesis is supported.

In our discussion of the results we will refer to the full model (Table 4). The effective sample size is 211 observations. The estimated system fits the survey data well, with a system-wide  $R^2$  equal to .2707. Thus, our model helps us to highlight some factors that are associated with more successful CRM Implementations.

[Table 4 approximately here]

In the following section, we report our findings in detail. We refer to standardized coefficients which account for scale effects and serve as indicators of the relative importance of exogenous variables. Please note that we report one-tailed significance levels. This seems to be adequate since we exclusively test directional hypotheses.

### Effects on Market-Based Performance

*CRM Implementation:* We hypothesized that the degree of CRM Implementation is positively associated with Market-based Performance (H1) and we find support for this hypothesis

( $\beta_1 = .1926$ ;  $p < .05$ ). Thus, the more firms engage in establishing CRM practices, the better they perform, based on market and economic measures.

*CRM Compatible Incentivization:* CRM compatible incentivization was hypothesized to have a positively moderating effect on the CRM Implementation-Market based Performance link (H2) and we find this moderating effect ( $\gamma_1 = .2035$ ;  $p < .01$ ) to be highly significant.

*CRM Technology:* We hypothesized that CRM Technology has a positively moderating effect on the CRM Implementation-Market based Performance link (H3). However, we observe a weakly significant negative effect ( $\gamma_2 = -.1406$ ;  $p < .1$ ). In other words, this finding is contrary to our expectations. Thus, the sophistication of CRM technology employed does not seem to enhance a company's ability to improve market-based performance through CRM implementation.

*Customer Heterogeneity:* Our hypothesis suggested that customer heterogeneity has a reinforcing effect on the CRM Implementation-Market based Performance link (H4). Support for this hypothesis is in evidence ( $\gamma_3 = .1133$ ;  $p < .05$ ), indicating that the degree of CRM Implementation has a stronger effect on market-based performance at higher levels of customer heterogeneity. In addition it is interesting to note that main effect for customer heterogeneity is strongly significant and in the negative direction ( $\beta_4 = -.1211$ ;  $p < .05$ ). In other words, the more heterogeneous the customer base, the lower the market performance. Taking these two findings together suggests that implementing CRM activities is one way to improve this situation and actually improve market performance.

*Distribution Channel Intensity:* We hypothesized that Distribution Channel Intensity has a positively moderating effect on the CRM Implementation-Market based Performance link (H5). This moderating effect cannot be established ( $\gamma_4 = -.0178$ ; n.s.). Thus, possible learning and scale

effects through more intense distribution channel utilization do not seem to have an enhancing effect on the CRM Implementation-Market based Performance link.

*Industry:* Our control variables capture effects due to industry membership. However, we only find one of the three industry dummies to be significant ( $\delta_1 = -.0297$ , n.s.;  $\delta_2 = .0567$ , n.s.;  $\delta_3 = .1334$ ,  $p < .05$ ). Thus, only for companies from the Hospitality industry (i.e., Industry 4) we observe a market-based performance that is significantly higher than in other industries.

### **Effects on Economic Performance**

The second equation in our model describes the effect on economic performance.

*Market-Based Performance:* We hypothesized that market-based performance has a positive effect on economic performance (H6). Support for this postulation comes from the significant model parameter ( $\beta_6 = .5473$ ;  $p < .01$ ). Obviously, firms that perform better in terms of market-based performance can translate those advantages in economic outcomes.

*Control Variables:* The variable CRM Technology is significant as a control variable and it has a negative effect on Economic Performance ( $\delta_4 = -.1571$ ;  $p < .05$ ). The association between Distribution Channel Intensity and Economic Performance is not significant ( $\delta_5 = -.0796$ ; n.s.). However, Distribution Channel Effectiveness is positively related to economic performance ( $\delta_6 = .4593$ ;  $p < .01$ ). Finally, we do not find substantial evidence for industry-specific intercept effects ( $\delta_7 = .0172$ , n.s.;  $\delta_8 = .0440$ , n.s.;  $\delta_9 = .1197$ ,  $p < .1$ ). Table 5 summarizes the results of the hypothesis testing.

**[Table 5 approximately here]**

### **Cross-Validation of Results**

While the results of the previous analysis allow for early inferences, one could raise a possible concern due to the use of single informants in the collection of the data. In other words,

one individual may not necessarily possess a totally accurate or unbiased view of the entire organization. Relatedly, one could question the reliability of the subjective performance indicators that were used in the study (i.e., they could be artificially related to the other indicators measured). Therefore, in order to validate the findings and to counter a possible common-method bias, we collected additional data and conducted two further analyses.

First, a second set of data was collected from a different set of respondents within the same firm sample using the identical questionnaire as before (hereafter called Study 2). The objective was to assess the robustness of Study 1 findings using a separate sample of respondents (Deshpandé, Farley and Webster 1993; Ganesh, Arnold, and Reynolds 2000). This is particularly important in the context of our study where respondents need to know about organizational aspects as well as about performance aspects (Menon et al. 1999). Second, we attempted to determine the reliability of the findings by validating the subjective performance indicators from Study 1 and Study 2 with a survey of objective performance measures. This is particularly important for empirical survey research where a reliance on subjective performance measures may be a limitation (Jaworski and Kohli 1996).

***Cross-Validation of Model:*** The sampling frame was the 211 companies that responded in the first round of data collection. The second set of data was collected immediately after concluding Study 1 in order to minimize any temporal biases. In this second wave, 95 valid responses (45% response rate) were obtained from the same group of target respondents (sales managers, marketing managers, CEO's). Since a substantial part of our participants in Study 1 are SMEs, it was extremely difficult to identify a second, knowledgeable informant in such companies. Many respondents of Study 1 were also very reluctant to name second informants since they did not appreciate this cross-validation procedure. In order to assess potential differences in sample respondents, wave 1 and wave 2 respondents were compared on several descriptive variables,

however, no differences were found between the groups. The estimation procedure was identical to the first study. In terms of model specification and model parsimony, we dropped the variable Distribution Channel Intensity because it was insignificant in the first study. The results of the model estimation are summarized in Table 6.

**[Table 6 approximately here]**

Similar to Study 1, the estimated system fits the data well, with a system-wide  $R^2$  of .3449. The key finding is that both main effects from Study 1 can be replicated (H1 and H6). That is, we find that CRM Implementation is positively associated with market-based performance which in turn is associated with greater economic performance. The second set of findings revolve around the hypothesized moderating effects. In Study 2, none of the moderating effects of CRM technology, CRM compatible incentivization, and customer heterogeneity is significant (albeit all signs are in the same direction as in Study 1). The fact that the standardized effects are similar to Study 1 could be an indication that the non-significant findings of Study 2 are a function of the smaller sample size. The only main effect that is significant is that of Customer Heterogeneity, meaning that in the presence of greater customer heterogeneity, market-based performance tends to drop. With respect to the second equation (DV=economic performance), distribution channel effectiveness is positive and significant, similar to Study 1.

***Cross-Validation of Subjective Performance Measures:*** To cross-validate the findings from the survey research we attempted to obtain objective performance measures for the 211 companies in Study 1 from secondary and company sources. Our goal was to measure the degree to which the subjective and the objective performance measures converge and, if this occurs, this lends greater credibility to our survey results (Han, Kim, and, Srivastava 1998). Since our sample consists of public as well as non-public firms from different industries, we cannot rely on absolute performance measures. Thus, we needed to have measures of relative performance. Similar to previous studies,

performance was assessed in terms of growth and profitability (McKee, Varadarajan, and Pride 1989; Han, Kim, and Srivastava 1998). The information was obtained from company reports for public companies as well secondary sources for non-public companies. The specific measures obtained were net income growth, defined as “ $\Delta$  net income 2000-2001/net income in 2000”, and return on assets (ROA), defined as “net income in 2001/total assets in 2001”. We were able to collect the objective performance measures for 93 companies (76 public, 17 non public). We then correlated the objective performance measures with the performance measures obtained from the two survey waves respectively (see Table 7).

**[Table 7 approximately here]**

The correlation analysis yields a number of interesting insights. First, the correlations between the performance measures of the two waves of the survey research are very substantial. Second, all of the objective performance measures correlate positively with the subjective performance measures. Albeit, one correlation is not significant, due to low power of the limited sample size. Also, the correlation between the two objective performance measures (ROA and Net Income Growth) is not significant. This can be explained by the slow German economy (Business Week, 2001) leading to marginal growth rates, while companies were still achieving high ROAs. Overall, these correlations demonstrate the convergent validity of the various performance measures used in this research, thereby lending support for the validity of our substantive findings.

## **DISCUSSION**

The goal of the current study was threefold: (1) to determine how the degree of CRM implementation can be conceptualized and operationalized, (2) to determine whether the implementation of CRM activities is positively linked to performance outcomes, and (3) to identify some key moderators of the relationship between CRM activities and performance. The results of this empirical effort from two studies produced a number of interesting findings.



First, the data support our conceptualization for the CRM construct. As mentioned previously, the goal of this conceptualization was to outline the key activities which constitute a CRM strategy. We grouped these activities in terms of the three stages of the CRM process: acquisition, retention, and termination. We then developed items to assess the extent to which activities are implemented at each one of these stages. By combining these activities, we were able to develop an overall index of the degree of CRM implementation. Our findings indicate that this index is meaningfully related to a variety of other important constructs such as market and financial performance. This link of our index of CRM Implementation and the SBU's performance is evidence of the nomological validity of the CRM index. More evidence for the index' validity is given in the section on item measurement and scale development. In particular, we could identify substantial positive correlations between 11 independent measures and the sub-factors of our overall CRM index. Additional evidence is provided that indicator collinearity is unlikely to be a problem in our approach to scale development, and both tests of the index' external validity and its discriminant validity indicate that the index fulfills criteria proposed by Diamantopoulos and Winklhofer (2001). Therefore, we are confident that our construct CRM Implementation can be considered a valid measurement scale of company activities focusing at building, maintaining, and possibly terminating customer relationships.

Second, our findings indicate the CRM Implementation is associated with better company performance – specifically that CRM Implementation is linked to greater market-based performance which in turn is positively associated with a company's financial performance. Thus, CRM does appear to produce some of the pay off that companies expect when they invest in CRM activities. Note, however, that the effect size for this relationship was smaller than would be expected. This may suggest that not all CRM activities are necessarily associated with improved performance. In other words, it is likely that some types of activities may increase performance while others may

not. Our index provides an overall assessment of the degree of CRM implementation. A key focus for future research, however, would be to examine how more specific types of activities are linked to improved performance, i.e. when and under which conditions is it better to engage in customer acquisition vs. customer retention vs. customer exit. Such a study would help to improve the efficiency of CRM efforts.

Further support for this notion is provided by the results of the moderator effects. First, there was a significant interaction between CRM Implementation and incentivization in Study 1. This means that, as expected, CRM Implementation is more likely to improve performance when the company develops an incentivization and organizing scheme to support CRM-compatible behavior. If proper incentives are not installed, it may be difficult for these activities to produce their desired effects. Thus, it is not enough to simply implement CRM activities. The organization must be organized and a reward structure installed to support these activities. As mentioned earlier, this means that it is necessary to bring the customer perspective deeper into other functional areas of the organization (Kohli and Jaworski 1990; Day and Montgomery 1999). This also suggests that organization variables need to play a key role in future research efforts, which attempt to understand the performance impact of CRM. While this finding could not be replicated in Study 2, there is a certain possibility of a Type II error due to the small sample size and the resulting potential power problems. This occurred because it was not possible to get a second informant from all the companies in our sample (partially due to the fact that some of the companies in the sample were relatively small and partially due to non-response).

Another interesting and significant interaction was observed in Study 1 between CRM Implementation and customer heterogeneity. As expected, CRM Implementation is associated with improved company performance when there is a diverse customer base. This occurs because a wider variety of marketing activities are needed to serve a heterogeneous consumer population. As

mentioned previously, CRM has been positioned as one of the key ways of alleviating problems associated with a heterogeneous consumer segment (Hoekstra, Leeflang, and Wittink 1999). Our main study provides empirical evidence in support of this view. It is interesting to note that the main effect is significant and negative in both studies. This means that market-based performance tends to drop in the presence of increasingly heterogeneous customers which then is compensated for by CRM implementation measures. In other words, serving a diverse customer base per se is costly and difficult given their different expectations and needs. Such heterogeneous clients expect segment-specific or even tailor-made products and services. However, the strong positive coefficient of the interaction effect of CRM Implementation and customer heterogeneity emphasizes that CRM activities can be successfully used to address a diverse set of clients. A very interesting and fruitful area for future research activity would be to identify which types of CRM activities work best for different customer segments.

Another key finding in both studies was that the CRM implementation-CRM technology interaction was negatively related to performance. In many companies, CRM is equated with the use of technology so it was surprising to find that higher levels of technology did not produce stronger performance. In fact, the use of technology had a significant negative main effect on financial performance (Study 1). Thus, our data are consistent with existing evidence that a large proportion of CRM technology deployments do not perform up to expectations (IDC 2000). However, one could also argue that technological investments offer positive returns only after overcoming initial implementation difficulties. Since CRM IT investments are relatively recent, one could see a potentially reversed effect in the future. Nevertheless, our results emphasize the key point that successfully implementing a CRM program requires more than just technology and if firms focus only on technology, their efforts are likely to be disappointing – at least in the short-term. In particular, the successful implementation of CRM requires a strong people-related

component. Thus, future work in this area needs to focus more heavily on how these other components of the CRM system can be improved.

Finally, the expected interaction between distribution channel intensity and CRM Implementation was not significant. In fact, this relationship was even slightly negative. One possible explanation for this finding could be that using multiple channels extensively, while having some benefits, could also have negative effects. For example, being able to interact with the company through multiple channels could actually be confusing to customers and make the buying process more complex. In other words customers now have to make two decisions (what to buy and where to buy) rather than just one (what to buy). Thus, consumers might prefer to have one simple avenue for contact with the company rather than multiple contact points. In addition, when multiple channels are used, customers might be exposed to a greater variety of competitive offerings and this might encourage variety seeking. This could then lead to brand switching and lower market-based performance. Finally, building a strong and precise company image becomes more difficult over multiple channels.

### **Managerial Implications**

The results of our study have several important implications for managers. First, our research provides a benchmark index, which companies can use to monitor their CRM activities. A company could use this index to identify key activities, which must be implemented and it can provide a means for comparing their level of implementation to competitors and to other industries. As an example, companies who participated in the sample for this study were provided with a tailor-made summary report which allowed them to directly compare their own level of CRM implementation to other companies in their industry.

Furthermore, our results indicated that the CRM implementation-performance link was not as strong as expected. This suggests that there is considerable room for improvement in the

implementation of CRM activities. In particular, our findings strongly suggest that simply implementing CRM technology will not lead to the desired effect. Thus, managers need to pay greater attention to other aspects of CRM implementation. It is clear from our findings that developing an incentivization scheme which rewards CRM activities throughout the organization is a critical element in this effort. As mentioned previously, a customer focus needs to be brought deeper into other functional areas of the company. It cannot be isolated to marketing managers. What is clear, however, is that these other aspects of CRM implementation cannot be ignored.

Third, it is often argued that CRM works better in some industries than others. However, our industry control variables were not significant. This suggests that the issues related to CRM implementation are similar across different industries. This may possibly be due to the specific industries studied here (although these industries were selected to provide some degree of variance). However, our findings suggest that many of the key issues and problems may be relevant *across* a variety of industries.

Finally, as mentioned previously, our results suggest that a company wanting to implement a successful CRM strategy must reorganize to support customer-related activities and must develop an incentive system to motivate CRM-related activities. Simply installing technology or CRM software is not enough to ensure that this program will be profitable. Employees must be rewarded for engaging in CRM activities and customer-oriented behaviors.

### **Limitations and Future Research**

Although our study produced interesting and meaningful findings, there are some limitations, which need to be discussed. As mentioned earlier, one key topic for future research would be to assess how more specific aspects of the CRM Implementation construct relate to profitability. This would provide valuable information in terms of which specific types of activities (relationship initiation, maintenance, and/or termination) are more likely to be associated with

company performance and which do not. However, this kind of investigation would require a larger sample than that of the present study. In addition, it would be important for such a study to sample a wider variety of industries.

A key objective of our manuscript was to construct a valid index of the degree of CRM implementation. In particular, we conducted an extensive search through the business press, academic literature and supplemented this with in-depth interviews of CRM experts to identify relevant CRM activities. Thus, we attempted to capture as many current relevant CRM activities as possible. However, since new CRM activities will evolve over time, one could argue that our CRM index will need to be “enriched” or updated as these new activities become common practice in the future.

Third, the present study was cross-sectional. It is possible that some of the effects are more longitudinal in nature. For example, it is possible that the negative technology effects found may change over time as employees and customers become more accustomed to these systems. It might be that in the long run, one could expect a more positive relationship between the two variables. Therefore, a future longitudinal study might provide interesting insights as well.

Finally, an interesting topic for future research would be to identify possible antecedents or contingencies for the use of CRM systems. In other words, it is important to ask what drives the intensity of CRM implementation. For example, CRM may be more likely to be employed for certain types of products or services, customer segments, or competitive situations. An investigation of this type would help us understand when it is more or less important to focus on CRM implementation.

## TABLES

**Table 1: Correlations and Discriminant Validity of Latent CRM Implementation Factors**

	A	B	C	D	E	F	G	H	I
A. IMEASURE	<b>.753</b>								
B. ACQUISIT	.676	<b>.712</b>							
C. REGAIN	.700	.633	<b>.784</b>						
D. MMEASURE	.661	.540	.498	<b>.827</b>					
E. RETAIN	.535	.578	.494	.479	<b>.668</b>				
F. CROSS_UP	.566	.591	.549	.695	.504	<b>.797</b>			
G. REFERRAL	.367	.390	.388	.259	.365	.318	<b>.807</b>		
H. TMEASURE	.488	.358	.354	.511	.378	.342	.119	<b>1.000</b>	
I. EXIT	.250	.186	.158	.300	.362	.174	.197	.519	<b>.792</b>

Square roots of **Average Variance Extracted (AVE)** in the diagonal

**Table 2: Standardized PLS coefficients**

	INITIATE	MAINTAIN	TERMINATE	CRMINDEX
IMEASURE	.389			
ACQUISIT	.379			
REGAIN	.375			
MMEASURE		.283		
RETAIN		.340		
CROSS_UP		.388		
REFERRAL		.267		
TMEASURE			.367	
EXIT			.759	
INITIATE				.442
MAINTAIN				.537
TERMINATE				.160

**Table 3: Summary Statistics for the Measurement Scales**

Variable	Number of Items	Frequency	Mean	Standard Deviation	Min	Max
Market-based Performance	4	-	20.48	3.31	11.0	28.0
Economic Performance	5	-	23.27	4.93	8.0	34.0
CRM Implementation	39	-	6.50	1.71	2.3	10.3
CRM compatible incentivization	4	-	17.83	5.19	4.0	28.0
CRM Technology	4	-	16.04	5.05	4.0	28.0
Customer Heterogeneity	5	-	19.24	6.38	5.0	35.0
Distribution Channel Intensity	13	-	4.86	1.09	1.0	7.0
Distribution Channel Effectiveness	1	-	4.39	1.10	1.0	7.0
Industry 1 (Online Retailers)	1	64	-	-	-	-
Industry 2 (Financial Services)	1	78	-	-	-	-
Industry 3 (Power Utilities)	1	28	-	-	-	-
Industry 4 (Hospitality)	1	41	-	-	-	-

**Table 4: Results of the 3SLS Regression (Study 1)**

		Description	Coefficient	Restricted model	Full model	Full model (standardized)
<b>Equation 1</b>	<b>Dependent Variable</b>	<b>Market-based Performance</b>				
		Intercept	$\alpha$	15.4202***	15.1837***	.0000
	Main Effects	CRM Implementation	$\beta_1$	.0327***	.0168**	.1926
		CRM compatible incentivization	$\beta_2$		.0961*	.1415
		CRM Technology	$\beta_3$		.0688	.1014
		Customer heterogeneity	$\beta_4$		-.0669**	-.1211
		Distribution Channel Intensity	$\beta_5$		-.1959	-.0605
	Interactions	CRM comp. incentivization x CRM Implementation	$\gamma_1$		.00317***	.2035
		CRM Technology x CRM Implementation	$\gamma_2$		-.00193*	-.1406
		Customer heterogeneity x CRM Implementation	$\gamma_3$		.00146**	.1133
		Distribution Channel Intensity x CRM Implementation	$\gamma_4$		-.0013	-.0178
	Control Variables	Industry 2 (Financial Services)	$\delta_1$	-.4559	-.2167	-.0297
		Industry 3 (Power Utilities)	$\delta_2$	.0068	.5874	.0567
Industry 4 (Hospitality)		$\delta_3$	.7817	1.1855**	.1334	

<b>Equation 2</b>	<b>Dependent Variable</b>	<b>Economic Performance</b>				
		Intercept		-.7827	1.1105	.0000
	Main Effect	Market-based performance	$\beta_6$	1.1431***	.8126***	.5473
	Control Variables	CRM Technology	$\delta_4$		-.1582**	-.1571
		Distribution Channel Intensity	$\delta_5$		-.3828	-.0796
		Distribution Channel Effectiveness	$\delta_6$		2.1770***	.4593
		Industry 2 (Financial Services)	$\delta_7$	.7971	.1857	.0172
		Industry 3 (Power Utilities)	$\delta_8$	1.0422	.6780	.0440
		Industry 4 (Hospitality)	$\delta_9$	1.6023**	1.5799*	.1197

**System-wide R<sup>2</sup>**

**.1586**

**.2707**

\*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$  (one-tailed significance levels)



**Table 5: Summary of Results**

<b>Hypothesis</b>	<b>Description</b>	<b>Result</b>
1	The higher the degree of CRM Implementation, the higher the company performance in the market.	Supported
2	The greater the level of CRM compatible incentivization, the stronger the positive link between CRM Implementation and market-based performance.	Supported
3	The greater the level of CRM technology, the stronger the positive link between CRM Implementation and market-based performance.	Not supported
4	The greater the level of customer heterogeneity, the stronger the positive link between CRM Implementation and market-based performance.	Supported
5	The higher the distribution channel intensity, the stronger the positive link between CRM Implementation and market-based performance.	Not supported
6	The higher the company performance in the market, the higher the economic performance of the company.	Supported

**Table 6: Results of the 3SLS Regression (Study 2 – replication sample)**

		Description	Restricted model	Full model	Full model (standardized)
<b>Equation 1</b>	<b>Dependent Variable</b>	<b>Market-based Performance</b>			
		Intercept	14.762***	17.837***	.0000
	Main Effects	CRM Implementation	.0337***	.0255*	.3093
		CRM compatible incentivization		.0356	.0508
		CRM Technology		.0040	.0054
		Customer heterogeneity		-.1427**	-.2383
	Interactions	CRM comp. incentivization x CRM Implementation		.0019	.1208
		CRM Technology x CRM Implementation		-.0023	-.1365
		Customer heterogeneity x CRM Implementation		.0014	.1142
	Control Variables	Industry 2 (Financial Services)	-.358	-.3911	-.0549
		Industry 3 (Power Utilities)	-.452	-.1056	-.0117
Industry 4 (Hospitality)		1.742*	1.4089	.1675	

<b>Equation 2</b>	<b>Dependent Variable</b>	<b>Economic Performance</b>			
		Intercept	-2.1069	-4.139	.0000
	Main Effect	Market-based performance	.9617***	.6828**	.5973
	Control Variables	CRM Technology		-.0271	-.0314
		Distribution Channel Effectiveness		1.8688***	.4485
		Industry 2 (Financial Services)	3.1668***	1.6679*	.2050
		Industry 3 (Power Utilities)	2.2125**	1.4626	.1423
	Industry 4 (Hospitality)	2.2937**	1.6601	.1727	

**System-wide R<sup>2</sup>**

**.2189**

**.3449**

\* p ≤ 0.1; \*\* p ≤ 0.05; \*\*\* p ≤ 0.01 (one-tailed significance levels)

**Table 7: Correlations between subjective and objective performance measures.**

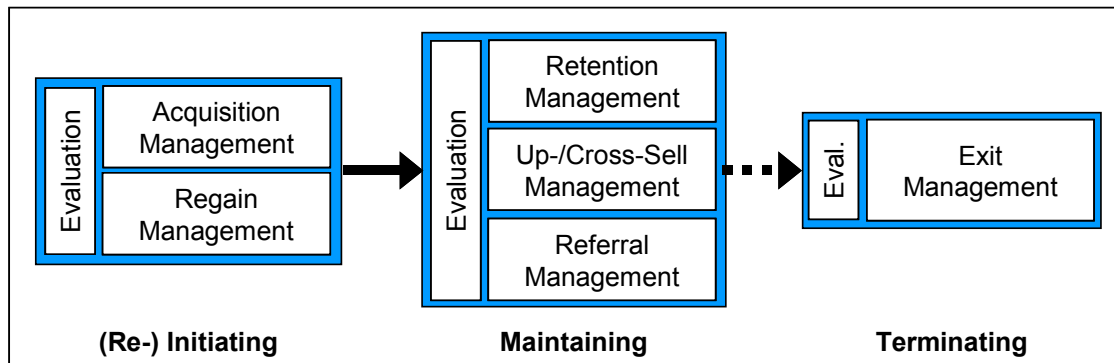
		Subjective Performance Measures Study 1		Subjective Performance Measures Study 2		Objective Performance measures	
		Market Performance (211)	Economic Performance (211)	Market Performance (101)	Economic Performance (101)	ROA (93)	Net Income Growth (93)
<b>Subjective Performance Measures Study 1</b>	Market Performance		.5361*** (211)	.4679*** (101)	.2787*** (101)	.3498*** (93)	.1869* (93)
	Economic Performance			.2526*** (101)	.6839*** (101)	.4847*** (93)	.2134** (93)
<b>Subjective Performance Measures Study 2</b>	Market Performance				.5693*** (101)	.1727 (50)	.2754* (50)
	Economic Performance					.3210** (50)	.2945** (50)
<b>Objective Performance measures</b>	ROA						.0804 (89)
	Net Income Growth						
<b>Means</b>		20.48	23.27	19.95	23.76	1.217%	-44.89%

Effective sample size in parentheses. The sample sizes differ due to different overlaps between Study 1 and Study 2 and the two objective performance measures.

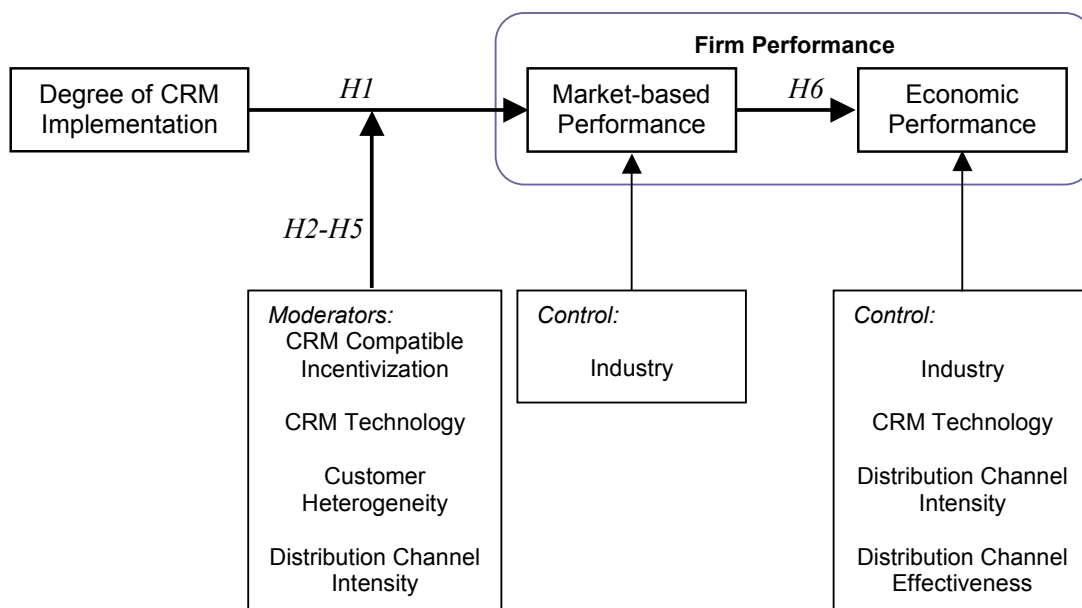
\*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$

## FIGURES

**Figure 1: Elements of CRM Implementation's Management Dimension**



**Figure 2: A Model of the Performance Outcomes of CRM Implementation**



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## APPENDIX

### DESCRIPTION OF MEASURES

#### ***CRM Implementation***

##### **Measurement at initiating stage (IMEASURE) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We have a formal system for identifying *potential* customers. {4.253}
- ◆ We have a formal system for identifying which of the *potential* customers are more *valuable*. {4.663}
- ◆ We use data from external sources for identifying potential high value customers. {1.590}
- ◆ We have a formal system in place that facilitates the continuous evaluation of prospects. {2.615}
- ◆ We have a system in place to determine the cost of re-establishing a relationship with a lost customer. {1.993}
- ◆ We have a systematic process for assessing the value of past customers with whom we no longer have a relationship. {2.021}
- ◆ We have a system for determining the costs of re-establishing a relationship with inactive customers. {1.953}

##### **Activities to acquire customers (ACQUISIT) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ [We systematically choose *not* to develop relationships with potential low value customers]. {1.109}
- ◆ We made attempts to attract prospects in order to coordinate messages across media channels. {1.397}
- ◆ We have a formal system in place that differentiates targeting of our communications based on the prospects value. {1.733}
- ◆ We systematically present different offers to prospects based on their value. {1.710}
- ◆ We differentiate our acquisition investments based on customer value. {1.580}

##### **Activities to regain customers (REGAIN) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We have a systematic process/approach to re-establish relationships with valuable customers who have been lost to competitors. {1.786}
- ◆ We have a system in place to be able to interact with lost customers. {1.881}
- ◆ We have a systematic process for re-establishing a relationship with valued inactive customers. {1.663}
- ◆ We develop a system for interacting with inactive customers. {1.796}

### **Measurement at maintaining stage (MMEASURE) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We have a formal system for determining which of our *current* customers are of the highest value. {3.144}
- ◆ We continuously track customer information in order to assess customer value. {3.808}
- ◆ We actively attempt to determine the costs of retaining customers. {1.826}
- ◆ We track the status of the relationship during the entire customer life cycle (relationship maturity). {1.760}

### **Activities to retain customers (RETAIN) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We maintain an interactive two-way communication with our customers. {1.453}
- ◆ We actively stress customer loyalty or retention programs. {1.379}
- ◆ We integrate customer information across customer contact points (e.g. mail, telephone, Web, fax, face-to-face, ...). {1.581}
- ◆ We are structured to optimally respond to groups of customers with different values. {1.660}
- ◆ [We recognize that some customers are short-term oriented while others are long-term oriented.] {1.221}
- ◆ We systematically attempt to customize products/services based on the value of the customer. {1.870}
- ◆ We systematically attempt to manage the expectations of high value customers. {1.580}
- ◆ We attempt to build long-term relationships with our high-value customers. {1.282}

### **Activities to manage up- and cross-selling (CROSS\_UP) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We have formalized procedures for *cross*-selling to valuable customers. {2.488}
- ◆ We have formalized procedures for *up*-selling to valuable customers. {2.902}
- ◆ We try to systematically extend our "share of customer" with high-value customers. {1.978}
- ◆ [We do not intensify in relationships with low-value customers.] {1.214}
- ◆ We have systematic approaches to mature relationships with high-value customers in order to be able to cross-sell or up-sell earlier. {2.289}
- ◆ We provide individualized incentives for valuable customers if they intensify their business with us. {1.415}

### **Activities to manage customer referrals (REFERRAL) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We systematically track referrals. {1.992}
- ◆ We try to actively manage the customer referral process. {2.487}
- ◆ We provide current customers with incentives for acquiring new potential customers. {2.440}
- ◆ We offer different incentives for referral generation based on the value of acquired customers. {2.103}

### **Measurement at termination stage (TMEASURE) \***

With regard to your strategic business unit, to what extent do you agree to the following statement?

- ◆ We have a formal system for identifying non-profitable or lower value customers.

### **Activities to actively de-market customers (EXIT) \***

With regard to your strategic business unit, to what extent do you agree to the following statements?

- ◆ We have a formal policy or procedure for actively discontinuing relationships with low value or problem customers (e.g. canceling customer accounts). {1.237}
- ◆ We try to passively discontinue relationships with low value or problem customers (e.g. raising basic service fees). {1.675}
- ◆ We offer disincentives to low-value customers for terminating their relationships (e.g. offering poorer service). {1.505}

\*: These scales are new and were considered as formative constructs, rated on a 7-point Likert format anchored 1 = strongly disagree, 7 = strongly agree. The variance inflation factors of each item with regard to the other items of the respective construct are within parentheses {}.

[]): Items in parentheses were eliminated in the validation procedure because of low factor loadings and high standard errors

### **The following indices were computed based on the construct formation as described above:**

**INITIATE** = .389\*IMEASURE + .379\*ACQUISIT + .375\*REGAIN

**MAINTAIN** = .283\*MMEASURE + .340\*RETAIN + .388\*CROSS\_UP + .267\*REFERRAL

**TERMINATE** = .367\*TMEASURE + .759\*EXIT

**CRMINDEX** = .442\*INITIATE + .537\*MAINTAIN + .160\*TERMINATE

### **Market-Based Performance** (adapted from Jaworski and Kohli, 1990, Desphandé, Farley and Webster, 1993)

Relative to your competitors, how does your SBU perform concerning the following statements?

- ◆ Achieving customer satisfaction.
- ◆ Keeping existing customers.
- ◆ Building a positive company image.
- ◆ Providing customer benefit.

Rated on a 7-point Likert format, labeled with “much worse – worse – a little worse – same level – a little better – better – much better”.

### **Economic Performance** (adapted from Jaworski and Kohli, 1990, Desphandé, Farley and Webster, 1993)

Relative to your competitors, how does your SBU perform concerning the following statements?

- ◆ Achieving overall performance.
- ◆ Attaining market share.
- ◆ Attaining growth.
- ◆ Attracting new customers.

- ◆ Current profitability.

Rated on a 7-point Likert format, labeled with “much worse – worse – a little worse – same level – a little better – better – much better”.

### ***CRM Compatible Incentivization***

With regard to your strategic business unit (SBU), to what extent do you agree to the following statements? We...

- ◆ have systematic training procedures for helping employees deal differentially with high and low value customers.
- ◆ reward employees for building and deepening relationships with high value customers.
- ◆ our SBU is organized in a way to optimally respond to customer groups with different profitability.
- ◆ Organizing people (i.e., changing organizational structure) to deliver differentiated treatment and products to different customer segments presents a strength for our SBU.

Rated on a 7-point Likert format, anchored by “strongly disagree – strongly agree”.

### ***CRM Technology***

With regard to your strategic business unit (SBU), to what extent do you agree to the following statements?

- ◆ We invest in technology to acquire and manage ‘real time’ customer information and feedback.
- ◆ We have a dedicated CRM technology in place.
- ◆ We have technologies that allow for one-to-one communications with potential customers.
- ◆ Relative to our competitors the quality of our information technology resources is larger.

Rated on a 7-point Likert format, anchored by “strongly disagree – strongly agree”.

### ***Customer Heterogeneity*** (adapted from Achrol and Stern, 1988)

Regarding your individual customers, how similar or different do you think they tend to be on the following:

- ◆ In terms of their incomes, professions, social-class, and education.
- ◆ In terms of the variety of products (different brands, product features) they like to consider.
- ◆ In terms of their product price/quality preferences
- ◆ In terms of their loyalty.
- ◆ In terms of their service needs.

Rated on a 7-point Likert scale, anchored by “very similar – very different”.

### ***Distribution Channel Intensity***

Please check the following list of alternative channels – which of the following channels listed do you currently use as distribution channel?

Direct, employed salespeople; manufacturer representatives (representing only your company); manufacturer representatives (representing several companies); own outlets and branches; retailers; wholesalers; franchisees; own online shops, portals, marketplaces;

external online shops, portals, marketplaces; telephone (call centers); own direct marketing (mailings, catalogs, etc.); external direct marketing (mailings, catalogs, etc.); brokers.

New summative scale, rated on a 7-point Likert format, anchored from 1 = not at all, 4 = to some extent and 7 = to a very high extent. The item scores were added across the 13 channels listed above (CHANN\_SUM). We also created a count variable CHNUMBER that captures the number of channels that are actually used by the respondents. Distribution Channel Intensity is then computed as  $((\text{CHANN\_SUM} - 13 + \text{CHNUMBER}) / \text{CHNUMBER})$ .

***Distribution Channel Effectiveness***

Compared to your competitors, how effective do you think your distribution channels are?

Rated on a 7-point Likert format, anchored by “much less effective – much more effective”.

***Industry***

The respondents were pre-selected from four different industries: IT/Online sector, financial services, utilities, and hospitality industry.