



CRM: conceptualization and scale development

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Abstract

Purpose – To develop a reliable and valid measuring scale for customer relationship management (CRM).

Design/methodology/approach – A series of studies were conducted for the development and validation of multiple measures for the dimensions of CRM. Once the dimensions of CRM were identified, data from study 1 ($n = 150$ business executives attending a part-time MBA program) were used to select items based on factor analysis. Then, confirmatory factor analyses was used on data obtained from a mail survey of Hong Kong financial firms in study 2 ($n = 215$) to examine factor structure, as well as to provide evidence of dimensionality, scale reliability and validity. Finally, in study 3, data from 276 business executives attending a seminar on CRM were used to test the scale generalizability of CRM measures in various industries.

Findings – A reliable and valid scale was developed to measure the four dimensions of CRM: key customer focus, CRM organization, knowledge management and technology-based CRM.

Research limitations/implications – Since this study was conducted in Hong Kong only, the generalizability of the CRM scale has to be tested in other countries. In addition, cross-sectional data were used in this study. Future studies should collect time-series data for the testing of the causal relationship between CRM and business performance.

Practical implications – The findings validate the long-held belief that CRM is a critical success factor for business performance. Firms wishing to improve their relationships with customers need constantly to monitor their behavioral and internal processes. The proposed scale in this study could be used as a diagnostic tool to identify areas where specific improvements are needed, and to pinpoint aspects of the firm's CRM that require work.

Originality/value – This is the first study to provide a comprehensive, psychometrically sound, and operationally valid measure of a firm's CRM.

Keywords Customer relations, Performance measures, Hong Kong, Knowledge management, Case studies

Paper type Research paper

Introduction

Customer relationship management (CRM) has generally been assumed to create a competitive edge for an organization, as well as to have a positive impact on organizational performance. However, there is still much debate over exactly what constitutes CRM. In fact, many scholars have claimed that the precise meaning of CRM is not always clear in the literature (Nevin, 1995; Parvatiyar and Sheth, 2001). Furthermore, Nevin (1995) notes that the term has become a buzzword, with the concept being used to reflect a number of differing themes or perspectives. For example, at a tactical level, CRM may mean database marketing (Peppers and Rogers, 1995) or electronic marketing (Blattberg and Deighton, 1991). At a strategic level, CRM may mean customer retention or customer partnering (Peppers and Rogers, 1993; Vavra, 1992). At a theoretical level, CRM may mean an emerging research paradigm in



marketing (Parvatiyar and Sheth, 2001). Thus, a clarification and conceptualization of this construct is needed to ensure that our knowledge of CRM grows in a “cumulative” way. Moreover, while we observe that there has been an increase in the attention paid to CRM by practitioners and academics, to date no systematic attempt has been made to develop a valid measure of it, or to assess its influence on business performance.

Given these problems, CRM, as an emerging paradigm in marketing, will remain underdeveloped until its key dimensions have been identified and operationalized. In fact, Gummesson (2002a) comments that CRM, as an emerging discipline, is in need of further theoretical development. The identification of the key dimensions of CRM is therefore very important. It is no longer sufficient to advise practitioners or researchers that the key to successful marketing is through CRM without providing information on what dimensions actually constitute relationships upon which CRM can be considered to exist. It is the goal of this paper to address the conceptual and measurement issues related to the study of CRM and its impact on business performance. Specifically, we first provide a brief conceptual background for the development of the CRM concept. We then set forth the hypothesized dimensions of CRM with a description of the procedures used to construct the subscales and assess their psychometric properties. Finally, we conclude with a discussion of the implications of the research findings and directions for future research.

Relationship marketing and CRM

Although past studies have made significant progress toward understanding the importance of cooperative and collaborative relationships between buyers and sellers (e.g. Berry, 1983, 1995, 2002; Crosby *et al.*, 1990; Dwyer *et al.*, 1987; Hart and Johnson, 1999; Morgan and Hunt, 1994; Palmer, 2000; Sheth and Parvatiyar, 1995), two questions remain unanswered:

- (1) What precisely is CRM?
- (2) How can it be implemented properly in a business organization?

In the marketing literature, the terms CRM and relationship marketing are used almost interchangeably (Parvatiyar and Sheth, 2000). For example, Berry (1983) defines relationship marketing as “attracting, maintaining and enhancing customer relationships.” Harker (1999) proposes the following definition: “An organization engaged in proactively creating, developing and maintaining committed, interactive and profitable exchanges with selected customers (partners) over time is engaged in relationship marketing.” Recently, by broadening the scope of relationship marketing and viewing it in a comprehensive management and social context, Gummesson (2002b) defines it as “marketing based on relationships, networks and interaction, recognizing that marketing is embedded in the total management of the networks of the selling organization, the market and society. It is directed to long term win-win relationships with individual customers, and value is jointly created between the parties involved.”

On the other hand, Jackson (1985) suggests CRM to mean “marketing oriented toward strong, lasting relationships with individual accounts.” Payne (2000) asserts that CRM is concerned with “the creation, development and enhancement of individualized customer relationships with carefully targeted customers and customer groups resulting in maximizing their total customer life-time value.” Recently, Kotler

and Armstrong (2004) define CRM as “the overall process of building and maintaining profitable customer relationships by delivering superior customer value and satisfaction.”

Although the above definitions differ somewhat, they all indicate that the core theme of CRM and relationship marketing perspectives revolves around its focus on individual buyer-seller relationships, that these relationships are longitudinal in nature, and that both parties benefit in the relationship established. In short, from a firm’s perspective, both the CRM and relationship marketing concept can be viewed as a distinct organizational culture/value that puts the buyer-seller relationship at the center of the firm’s strategic or operational thinking.

In spite of the commonalities described above, some important differences between CRM and relationship marketing do exist: first, relationship marketing is relatively more strategic in nature, whilst CRM is used in a more tactical sense (Ryals and Payne, 2001; Zablah *et al.*, 2004). Second, relationship marketing is relatively more emotional and behavioral, centering on such variables as bonding, empathy, reciprocity, and trust (Yau *et al.*, 2000). On the other hand, CRM is more managerial per se, focusing on how management can make concerted efforts in attracting, maintaining, and enhancing customer relationships. Third, relationship marketing embraces not just the supplier-customer dyad (Gummesson, 2002b) but encompasses the building of relationships with stakeholders, such as suppliers, internal employees, customers, and even government as well (Morgan and Hunt, 1994), but CRM is more dedicated to building relationships with key customers (Tuominen *et al.*, 2004).

Disappointedly, despite its increasingly acknowledged importance, little research has focused on the proper implementation of the CRM concept. Scattered research efforts have been observed in the realm of maintaining a deep customer focus (e.g. Vandermerwe, 2004), reengineering the organizational structure (e.g. Ryals and Knox, 2001), and managing knowledge by leveraging the use of information technology (e.g. Stefanou *et al.*, 2003). There is no theoretical, integrative framework to delineate how the CRM concept can be properly translated into a comprehensive set of concrete organizational activities conducive to CRM success. Furthermore, very little has been done in terms of creating a valid measurement scale and testing the concept empirically. Thus, it is the goal of this paper to propose a conceptualization of the basic dimensions of CRM, as well as to develop a reliable and valid measurement scale for these dimensions. In this study, we define CRM as “a comprehensive strategy and process that enables an organization to identify, acquire, retain, and nurture profitable customers by building and maintaining long-term relationships with them.”

The components of CRM

Based on past related literature (Crosby and Johnson, 2001; Day, 2003; Fox and Stead, 2001; Kalustian *et al.*, 2002; O’Halloran and Wagner, 2001; Paracha and Bulusu, 2002; Ryals and Knox, 2001; Tiwana, 2001) and indepth interviews with CRM managers[1], we hypothesize that CRM is a multi-dimensional construct consisting of four broad behavioral components: key customer focus, CRM organization, knowledge management, and technology-based CRM (see Figure 1). This is in accord with the notion that successful CRM is predicated on addressing four key areas: strategy; people; technology; and processes (Fox and Stead, 2001), and that only when all these four work in concert can a superior customer-relating capability emerge (Day, 2003).

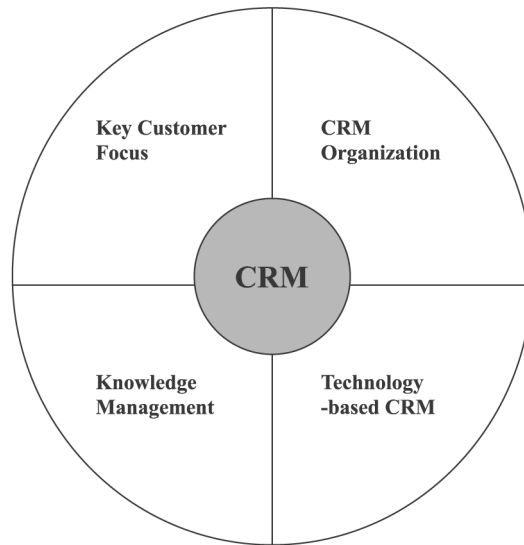


Figure 1.
The four dimensions of
CRM

For a business to maximize its long-term performance in such aspects as customer satisfaction, trust, return on sales, and return on investment, it must build, maintain, and enhance long-term and mutually beneficial relationships with its target buyers. We will discuss each component and then describe our research methodology along with the findings from our analysis.

Key customer focus

Key customer focus involves an overwhelming customer-centric focus (Sheth *et al.*, 2000; Vandermerwe, 2004), and continuously delivering superior and added value to selected key customers through personalized/customized offerings. **Key facets of this dimension include customer-centric marketing, key customer lifetime value identification, personalization, and interactive cocreation marketing.**

Customer-centric marketing. Customer-centric marketing, which has been gaining momentum as we enter the new millennium, is the endeavor to understand and satisfy the needs, wants, and resources of selected individual consumers (Sheth *et al.*, 2000). CRM stresses the deliberate selection of key customers who are of strategic significance, as not all customers are equally desirable (Ryals and Knox, 2001) and profitable (Thomas *et al.*, 2004). This can be illustrated by the hotly discussed Pareto 80/20 rule: 80 percent of a firm's profit comes from 20 percent of its customers (Hoffman and Kashmeri, 2000; Ryals and Knox, 2001). Having meticulously selected key customers, a CRM-oriented company should make every effort to understand their needs and wants, which is crucial to developing strong relationships with them.

Key customer lifetime value identification. Customer lifetime value is defined by Jain and Singh (2002) as "the net of the revenues obtained from that customer over the lifetime of transactions with that customer minus the cost of attracting, selling, and servicing that customer, taking into account the time value of money." In CRM, marketers assess the lifetime value of each customer individually to decide whether to build a relationship with him/her and provide customized offerings. This decision

should enhance company profit by focusing on profitable customers via more customized offerings, and reducing the subsidization of unprofitable customers.

Personalization. Personalization is defined as the practice of one-to-one marketing through the use of mass customization (Dyché, 2002; Hart, 1995), allowing customers to seek unique solutions to their specific needs. The great diversity in the needs, wants, and resources of customers makes customer behavior less predictable and forecasting less accurate. In this environment, mass marketing is rendered obsolete. Successful companies must rapidly adjust their supply to meet demand by relationship-based marketing, which strives to tailor marketing to individual customers.

Interactive cocreation marketing. The ongoing two-way communication between exchange partners in cocreation marketing, where both marketers and customers interact in aspects of product design and production, is considered critical for establishing and maintaining strong relationships (Berry, 1995; Day and Montgomery, 1999; Fox and Stead, 2001; Morgan and Hunt, 1994; Narayandas and Rangan, 2004). The key to cocreation marketing is collaboration, cooperation, and communication. Through this, firms can work with individual customers to offer customized solutions, create relationship value, enhance customer loyalty, and reduce the cost of doing business.

CRM organization

CRM essentially means fundamental changes in the way that firms are organized (Ryals and Knox, 2001) and business processes are conducted (Hoffman and Kashmeri, 2000). Firms should pay heightened attention to the organizational challenges inherent in any CRM initiative (Agarwal *et al.*, 2004). The key considerations to successfully organize the whole firm around CRM include organizational structure, organization-wide commitment of resources, and human resources management.

Organizational structure. CRM requires that the entire organization work towards the common goal of forging and nurturing strong customer relationships. As such, the organizational structural designs that most effectively optimize customer relationships include the establishment of process teams, customer-focused teams (Sheth and Sisodia, 2002), cross-discipline segment teams, and cross-functional teams (Ryals and Knox, 2001). All these structural designs demand strong interfunctional coordination (Sheth *et al.*, 2000) and interfunctional integration.

Organization-wide commitment of resources. Organization-wide commitment of resources should follow after crafting the design of organizational structure and integrating properly those involved components. In particular, sales and marketing resources, technical expertise, as well as resources promoting service excellence should all be in place. The success of customer acquisition, development, retention, and reactivation all hinges on the company's commitment of time and resources towards identifying and satisfying key customer needs (Nykamp, 2001).

Human resources management. Strategy, people, technology, and processes are all vitally important to CRM, but it is the individual employees who are the building blocks of customer relationships (Brown, 2000, p. xvii; Horne, 2003; McGovern and Panaro, 2004; Ryals and Knox, 2001). According to Krauss (2002), "[t]he hardest part of becoming CRM-oriented isn't the technology, it's the people." Internal marketing, where human resources and marketing interface, instills in employees the utmost importance of service-mindedness and customer orientation (e.g. Grönroos, 1990). The

four significant internal marketing processes include market training and education, internal communication, reward systems, and employee involvement.

Knowledge management

According to the knowledge-based view of the firm, the primary rationale for a firm's existence is the creation, transfer, and application of knowledge. From a CRM perspective, knowledge can be understood as what has been learned from experience or empirical study of consumer data. Key facets of "knowledge management" include knowledge learning and generation, knowledge dissemination and sharing, and knowledge responsiveness.

Knowledge learning and generation. Knowledge about key customers is essential for CRM (Stefanou *et al.*, 2003), as it can be used to develop a "learning relationship" with customers (Zahay and Griffin, 2004) and thus profoundly enhance the competitiveness of a firm. Customer information like their needs and preferences may be captured both directly, or indirectly, through two-way communication in an interactive feedback system. The primary objective of knowledge generation is to afford a 360-degree customer view. Business intelligence tools like data mining, data warehouses, and data marts help firms incorporate customer information into strategic business intelligence.

Knowledge dissemination and sharing. Knowledge is of limited value unless it is shared throughout the organization (Schulz, 2001). Further, knowledge value escalates through dissemination and sharing (Hult and Ferrell, 1997; Slater and Narver, 1995). Organizations must develop sound mechanisms for sharing customer knowledge to facilitate concerted actions by different departments.

Knowledge responsiveness. Knowledge responsiveness takes the form of acting on the knowledge generated and disseminated (Kohli and Jaworski, 1990). This encompasses selecting target segments, deliberately crafting the marketing mix in a manner that elicits favorable customer responses, and meticulously customizing product and service offerings that address customers' current and anticipated needs. As marketing is now more concerned with better responding to customer demand, actions taken in a prompt manner not only enhance service quality, but also foster long-term relationships with customers.

Technology-based CRM

Accurate customer data is essential to successful CRM performance (Abbott *et al.*, 2001) and, consequently, technology plays an important role in CRM in adding to firm intelligence (Boyle, 2004). In fact, the startling advances in IT equip enterprises with the capability to collect, store, analyze, and share customer information in ways that greatly enhance their ability to respond to the needs of individual customers and thus to attract and retain customers (Butler, 2000). The promise of one-to-one relationships, customer-value analysis, and mass customization (Hart, 1995) are now brought to reality by unprecedented advances in IT, transforming the traditional approach to CRM to an integrated, web-enabled approach, featured by tools like customer information systems, automation of customer support processes, and call centers (Ghodeswar, 2001). CRM calls for "information-intensive strategies" which utilize computer technologies in building relationships, leveraging existing technology and rigorously linking technology deployment to targeted business initiatives (Harding *et al.* 2004). Computer technologies such as computer-aided design/manufacturing,

flexible manufacturing systems, just-in-time production databases, data warehouses, data mining, and CRM software systems enable firms to provide greater customization with better quality at lower cost. It also helps staff at all contact points serve customers better. Many customer-centric activities would be impossible without appropriate technology.

Method

Overview

The research reported in the remainder of this article involves the development and validation of multiple measures for the dimensions of CRM. First, we describe the procedures used to generate and purify our initial pool of items. We provide evidence from these procedures for the content validity of the items. We then use data from study 1 ($n = 150$) to select items based on factor analysis. Subsequently, we use confirmatory factor analyses on data obtained in study 2 ($n = 215$) to examine factor structure, as well as to provide evidence of dimensionality, scale reliability, and validity. Finally, we present the results of study 3 ($n = 276$), which was designed to test the scale generalizability of CRM with data collected from various industries.

Item generation and content validity

As discussed in the previous section, we have identified CRM to be a multi-dimensional construct consisting of four behavioral components: key customer focus; CRM organization; knowledge management; and technology-based CRM. Following Churchill's (1979) suggestion for scale development, once the dimensions have been identified, a pool of items should be generated for each dimension of the construct. Based on a review of related literature (e.g. Crosby and Johnson, 2001; Day, 2003; Fox and Stead, 2001; Kalustian *et al.*, 2002; Paracha and Bulusu, 2002; Ryals and Knox, 2001; Tiwana, 2001), 78 statements/items were developed to measure the four components of CRM. The 78 items can be found in Appendix 2. Following the item generation step, two faculty members from the Faculty of Business at one university in Hong Kong and two CRM managers served as judges to evaluate the content/face validity of the items. In this analysis, the four judges were exposed to the definition of each component plus a related explanation and asked to allocate each of the 78 statements to an appropriate component or to a "not applicable" category. Items that did not receive consistent classification by the four judges were eliminated. A total of 30 statements were deleted in this process, resulting in 48 statements for further analysis.

Study 1: item purification

In order to test the internal consistency of the CRM scale and to reduce the number of items to a manageable size, a pilot survey had been conducted before the main study was implemented. In the pilot study, 150 middle to senior business executives attending the part-time MBA program offered by one university in Hong Kong were given the 48-item questionnaire in class. Each participant was asked to indicate on a six-point scale (1 = "strongly disagree," 6 = "strongly agree") the extent to which he/she agreed with the items with respect to the marketing/management practices engaged by his/her affiliated firm. With exploratory factor analyses, altogether 25 items with cross loadings were deleted, resulting in a 23-item scale to measure CRM.

Subsequent factor analysis was carried out on the 23 items. Principal component analysis resulted in a four-factor solution (see Table I). The coefficient alphas for the “key customer focus,” “CRM organization,” “knowledge management” and “technology-based CRM” dimensions were 0.847, 0.865, 0.833 and 0.853 respectively, all of which are above the threshold recommended by Nunnally (1978).

Study 2: reliability and validity assessment

Sample and data collection. The data for this study were collected from service firms in Hong Kong’s financial industry. Hong Kong, as an international financial center, is chosen as the first place for setting up regional headquarters in Asia by multinational enterprises. With diverse cultural backgrounds, these companies provide valuable data, from which we can derive our findings with high generalizability. Moreover, sampling from the financial industry is appropriate. First, as the implementation of CRM is widespread (Peppard, 2000) and more advanced (Ryals and Payne, 2001) in financial services than in most other industry sectors, the findings of this study can provide some valuable and enlightening insights to organizations in other sectors. Second, despite the fact that financial services constitute a large sector of the economy[2], there is a scant amount of research conducted to look into the adoption and experiences of firms adopting CRM in this sector (Ryals and Payne, 2001). This study can serve as an attempt to fill this research void.

The survey was administered using a two-step procedure. In the first phase, a questionnaire entitled “Marketing practice survey” and a cover letter explaining the purpose of the survey were mailed to “The General Manager” of selected organizations based on a random sampling from a database provided in the *Business Directory of Hong Kong* (2000/2001). In the second phase, a follow-up letter with a questionnaire was mailed five weeks later, which reminded participants to complete and return the survey within the pre-specified time period. To sum up, questionnaires were mailed to a random sample of 1,223 service firms. A total of 215 completed surveys were returned, yielding a usable response rate of 17.6 percent (215/1,223). In Hong Kong, the usual response rate for company survey is from 15 to 20 percent. The characteristics of the respondents and their firms are presented in Table II. The sample represents a cross-section of firms with varying characteristics.

Non-response bias may be found in this study. Early respondents were compared with late respondents along all the response items for each of the scales. The chi-square tests show that, except for the difference on education level, no significant differences were found between the early and late respondents on firm and personal characteristics. In addition, *t*-test results indicate that there were no significant differences between the early and late respondents on CRM and performance measures. It can thus be concluded that non-response bias is probably not a serious problem in this study.

Dimensionality assessment. Before assessing the reliability and validity of the CRM scale, data collected from the financial industry were first analyzed for scale purification. Following the procedure for purifying instrument employed by Jaworski and Kohli (1993), the correlation matrix of the 23 items capturing the components of “key customers focus,” “CRM organization,” “technology-based CRM” and “knowledge management” was used as input for confirmatory factor analysis. In this study, two measurement models were tested and compared:

Table I.
Results of exploratory
factor analysis

Variables	Key customer focus	CRM organization	Technology- based CRM	Knowledge management
KCF1	Through ongoing dialogue, we work with individual key customer to customize our offerings	0.774		
KCF2	My organization provides customized services and products to our key customers	0.710		
KCF3	All people in my organization treat key customers with great care	0.682		
KCF4	My organization makes an effort to find out what our key customer needs	0.675		
KCF5	When my organization finds that customers would like to modify a product/service, the departments involved make coordinated efforts to do so	0.599		
CRMO1	Customer-centric performance standards are established and monitored at all customer touchpoints	0.709		
CRMO2	My organization has the sales and marketing expertise and resources to succeed in CRM	0.706		
CRMO3	Our employee training programs are designed to develop the skills required for acquiring and deepening customer relationships	0.700		
CRMO4	My organization has established clear business goals related to customer acquisition, development, retention and reactivation	0.608		
CRMO5	My organization commits time and resources in managing customer relationships	0.516		
CRMO6	Employee performance is measured and rewarded based on meeting customer needs and on successfully serving the customer	0.500		
CRMO7	Our organizational structure is meticulously designed around our customers	0.462		

(continued)

Variables	Key customer focus	CRM organization	Technology- based CRM	Knowledge management
TBCRM1	My organization has the right technical personnel to provide technical support for the utilization of computer technology in building customer relationships		0.808	
TBCRM2	My organization has the right software to serve our customers		0.742	
TBCRM3	My organization has the right hardware to serve our customers		0.576	
TBCRM4	Individual customer information is available at every point of contact		0.570	
TBCRM5	My organization maintains a comprehensive database of our customers		0.429	
KM1	Customers can expect exactly when services will be performed			0.774
KM2	Customers can expect that my organization's employees respond to their requests promptly			0.578
KM3	My organization's employees are willing to help customers in a responsive manner			0.530
KM4	My organization fully understands the needs of our key customers via knowledge learning			0.526
KM5	My organization provides channels to enable ongoing, two-way communication with our key customers and us			0.437
KM6	Customers can expect prompt service from employees of my organization			0.334
Eigenvalue		4.739	3.982	2.707
Percentage of variance		20.605	17.314	11.770

Table I.

Characteristics	<i>n</i>	Percent
<i>(I) Firm</i>		
<i>Industry</i>		
Banking	59	27.6
Investment companies	96	44.9
Insurance	33	15.4
Others	9	4.2
No response	17	7.9
<i>Country of origin of the firm</i>		
Mainly local (HK) capital	91	42.5
Mainly overseas capital	98	45.8
Mainly mainland China capital	5	2.3
No response	20	9.3
<i>Size of the firm (number of total full-time employees)</i>		
< 50	114	53.3
50-100	28	13.1
101-200	9	4.2
> 200	48	22.4
No response	15	7.0
<i>Nature of the firm's major customers</i>		
Business firms/organizations	84	39.3
Individual customers	92	43.0
Both	23	10.7
No response	15	7.0
<i>(II) Personal</i>		
<i>Age (years)</i>		
25-35	54	25.2
36-45	68	31.8
Above 45	73	34.1
No response	19	8.9
<i>Education level</i>		
Secondary/high school	29	13.6
University/post-graduate	168	78.5
No response	17	7.9
<i>Position held</i>		
Top manager	110	51.4
Middle-level manager	86	40.2
No response	18	8.4

Table II.
Characteristics of
firms/respondents

- *Model 1 (one-factor model)*: CRM is conceptualized as a uni-dimensional construct with four sub-dimensions, the covariance among the 23 items can be accounted for by a single factor (see Figure 2).
- *Model 2 (four-correlated-factors model)*: CRM is conceptualized as a multi-dimensional construct. Covariation among the items can be accounted by the four restricted first-order factors, with each factor representing a distinct dimension of CRM and each item being reflective of only a single dimension. The four factors are correlated.

With confirmatory factor analysis, summary statistics for these two models are shown in Table III. Taken together, the two models provide only moderate levels of fit;

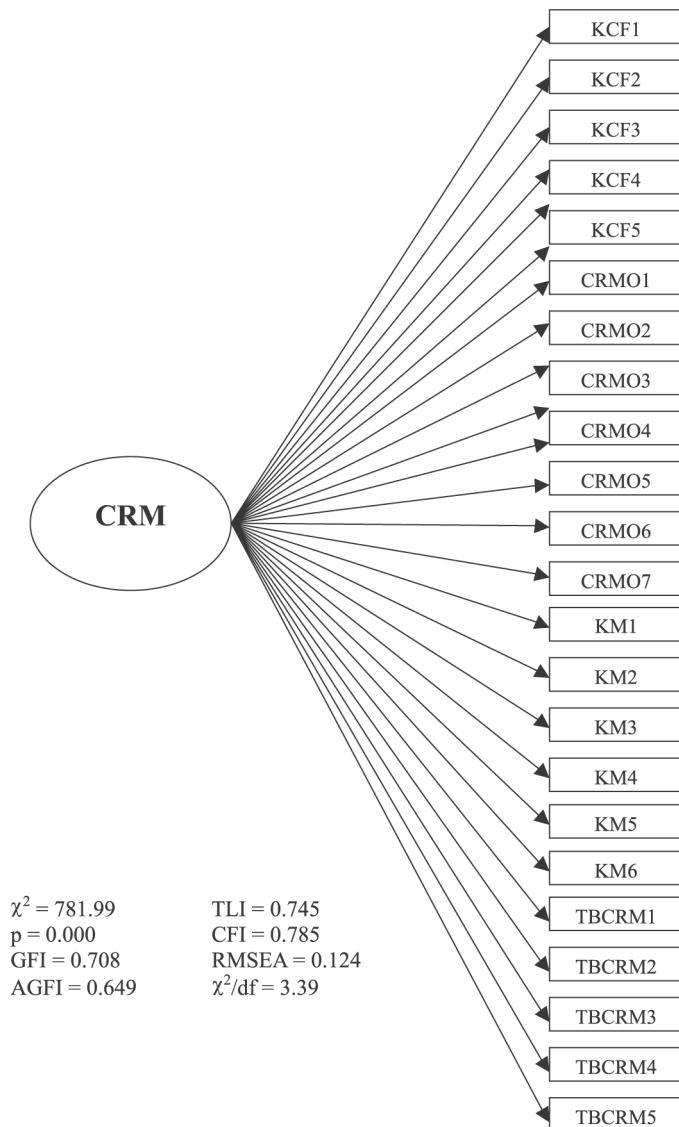


Figure 2.
Model 1 for CRM

however, model 2 was found to outperform model 1 on absolute measures (χ^2 , GFI, and RMSEA), incremental fit measures (CFI and TLI), and parsimonious fit measures (AGFI and χ^2/df).

In order to further improve the fitness of model 2, items that fail to have substantial loadings on the factors to which they are originally assigned (e.g. a standardized loading of < 0.3) or items that load on more than one factor (e.g. indicated by large modification indices) were deleted (see Table IV). With these criteria, the number of items representing CRM was reduced from 23 to 18 (please see Appendix 1 for these 18

Table III.

Comparison of the results obtained for the CRM construct

	Model 1: one general factor	Model 2: four correlated factors
<i>Absolute measures</i>		
χ^2 statistics	781.9921	486.11
GFI	0.7081	0.895
RMSEA	0.1243	0.070
<i>Incremental fit measures</i>		
CFI	0.7859	0.895
TLI	0.7645	0.881
<i>Parsimonious fit measures</i>		
AGFI	0.6498	0.779
NC (χ^2/df)	3.3999	2.170

Table IV.

Steps in fitting the baseline model for the CRM construct

Number	Competing models	χ^2	<i>p</i>	df	χ^2/df	GFI	RMSEA	CFI	TLI	AGFI
2	Baseline model	486.11	0.0000	224	2.170	0.821	0.07	0.895	0.881	0.779
2A	Removed items KCF5, CRMO1, CRMO4, KM3, KM6	194.48	0.0001	129	1.507	0.900	0.05	0.960	0.960	0.870

items). Refitting model 2 resulted in considerable improvement of fit ($\chi^2/\text{df} = 1.507$, GFI = 0.90, RMSEA = 0.05, CFI = 0.960, TLI = 0.960 and AGFI = 0.870). The confirmatory factor analysis led to the elimination of five measurement indicators. The result of this analysis suggested that CRM in Hong Kong's financial firms is a multi-dimensional construct that consists of four dimensions (see Figure 3).

Reliability assessment. To assess the reliabilities of the four subscales of CRM, construct reliability was computed for each factor, which is calculated as follows (Fornell and Larcker, 1981):

$$\text{Construct reliability} = \frac{(\sum \text{std. loading})^2}{(\sum \text{std. loading})^2 + \sum \varepsilon_j},$$

where ε_j is the measurement error for each indicator

The reliability coefficient of the four subscales ranges from 0.803 to 0.857, which met the standard of 0.7 as suggested by Nunnally (1978). Thus, these findings augment the case for scale reliability of CRM measures.

Construct validity. Construct validity has been defined as “the degree to which a measure assesses the construct it is purported to assess” (Peter, 1981, p. 134). In this section, the construct validity of the CRM scale was examined by assessing convergent, discriminant, and nomological validity:

- *Convergent validity.* Convergent validity refers to the degree of agreement in two or more measures of the same construct. Evidence of convergent validity in the CRM scale was assessed by inspection of the variance extracted for each factor as depicted in Figure 3. According to Fornell and Larcker (1981), convergent validity is established if the variance extracted value exceeds 0.50 for a factor. A confirmatory factor analysis showed that the variance extracted ranged from

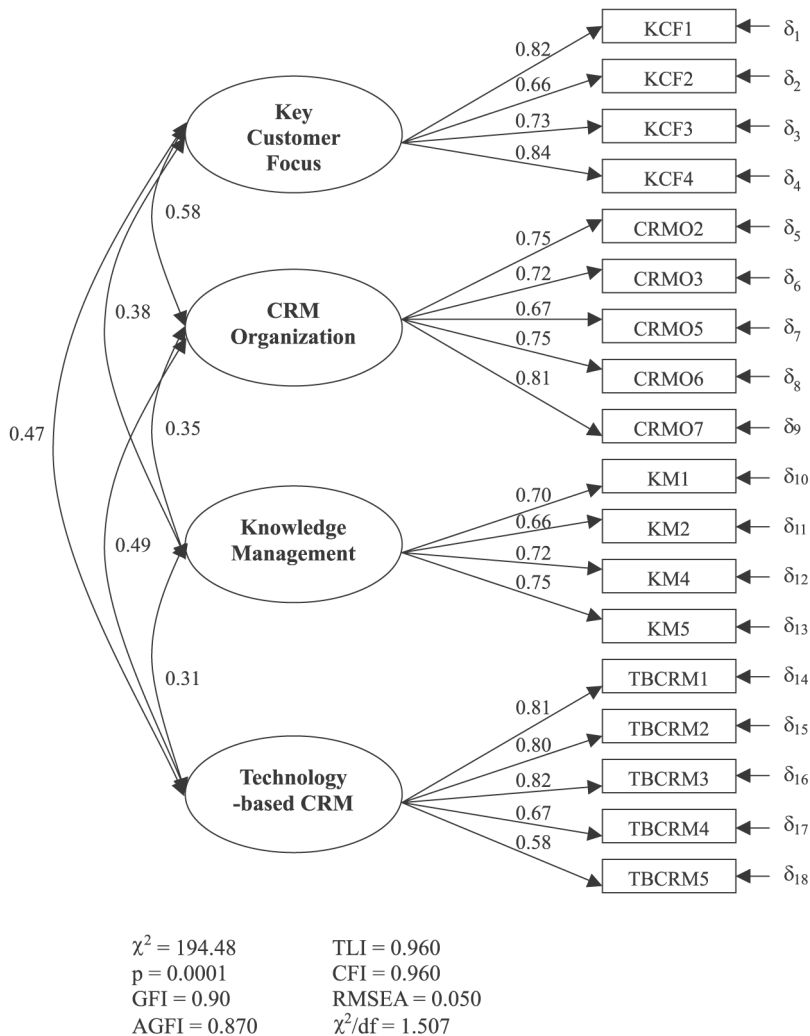


Figure 3.
Modified four-factor
correlated model for CRM

0.520 to 0.710. In addition, all items of the CRM measure loaded significantly positive on their specified factor (see Figure 3). Given that all the items loaded highly on the factors to which they were assigned is indeed itself a test of convergent validity of the scale, we are convinced that the scales for these four dimensions of CRM possessed convergent validity.

- *Discriminant validity.* Discriminant validity indicates the degree to which measures of conceptually distinct construct differ. Discriminant validity was assessed by the test provided by Fornell and Larcker (1981) in which the pairwise correlations between factors obtained from the four-factor correlated model was compared with the variance extracted estimates for the dimensions making up each possible pair. Evidence of discriminant validity occurs when

variance extracted estimates exceed the square of the correlation between the factors making up each pair. Table V shows that the relatively high variance extracted for each factor compared to the inter-scale correlations between factors indicated discriminant validity.

- *Nomological validity.* Nomological validity shows the ability of a scale to behave as expected with respect to some other constructs to which it is related (Churchill, 1995). There are well-grounded theoretical reasons to expect a positive association between CRM and business performance (e.g. Crosby and Johnson, 2001; Gruen *et al.*, 2000; Payne, 2000; Ryals and Knox, 2001; Ryals and Payne, 2001; Sheth and Sisodia, 2001). Thus, in the current context, nomological validity would be demonstrated if the scores of the measures of CRM were positively and significantly correlated with business performance.

Given that no simple indicator can adequately capture the multifaceted nature of business performance, two broad categories of measures were used in this study. The first measure is related to marketing performance (trust and customer satisfaction) and the second measure is related to financial performance (return on investment and return on sales). In addition, since business performance can have a variety of meanings (e.g. short- or long-term growth; financial or organizational benefits), it is broadly viewed from two perspectives in the literature. First, there is the subjective concept, which is primarily concerned with the performance of firms relative to that of their competitors (Golden, 1992). The second method is the objective concept, which is based on absolute measures of performance (Chakravarthy, 1986; Cronin and Page, 1988). For this study, a subjective rather than an objective approach was used for the following two reasons. First, company information is usually classified as highly confidential in Chinese societies, like Hong Kong. Respondents may be reluctant to provide hard financial data. Second, past studies have reported a strong association between objective measures and subjective responses (Dawes, 1999; Jaworski and Kohli, 1993; Pearce *et al.*, 1987; Robinson and Pearce, 1988; Venkatraman and Ramanujam, 1986). To measure business performance, each respondent in this study was asked to evaluate his/her company's current business performance in the local market relative to its major competitors with respect to the following four items: trust; customer satisfaction; return on investment; and return on sales. Responses were made on a six-point scale ranging from "better than" to "worse than" major competitors. An assessment of the nomological validity of the CRM scale was conducted through the subsequent structural equation modelling analyses. The findings supported the hypothesis that there is a positive correlation between CRM and marketing performance ($r = 0.754$, $p < 0.01$) and financial performance ($r = 0.421$, $p < 0.01$)

Composite scale	KCF	CRMO	KM	TBCRM
Key customer focus	0.690 ^a			
CRM organization	0.580	0.710 ^a		
Knowledge management	0.380	0.350	0.520 ^a	
Technology-based CRM	0.470	0.490	0.310	0.701 ^a

Note: ^a Variance extracted

Table V.
Correlation table of
summated scales

(Figure 4). Therefore, there is evidence of nomological validity for the proposed CRM scale.

In sum, we find evidence of convergent validity, discriminant validity, and nomological validity, and thus our findings lend support to the construct validity of the four-factor model of CRM.

Study 3: scale generalizability

Even though our proposed factorial structure has a good fit with the data (Figure 3), we recognize that the results could be specific to this particular sample. In particular, one of the major limitations of study 2 is that data in this study were only obtained from services firms in Hong Kong's financial industry. Although it can be said that the sample represents a cross-section of a large number of firms, the generalizability of the CRM scale to other industries is still questionable. To provide evidence on scale generalizability of CRM, a replicative study on a wider scale with firms from different industries is essential. In an effort to achieve this, we further conducted study 3 in which confirmatory factor models were examined using responses obtained from a third sample of 276 business executives from varying industries.

Sample and data collection. To validate our findings, data in this study were collected in a seminar on CRM using the same instrument. All participants are middle or top management executives. During the seminar, a questionnaire on CRM was distributed to each of them to solicit their responses. A total of 276 completed questionnaires were collected in this study. The response rate is about 98 percent. Essentially, the respondents come from a multitude of industries, such as manufacturing (15.9 percent), hotel (15.2 percent), retail trade (7.6 percent), communications (5.8 percent), banking (5.4 percent) and others (50.1 percent). As a whole, they represent a diverse sample that lends itself well to a replicative study.

Data analyses. We then conducted a replicative analysis with the data obtained in this study on the measurement model and structural model as depicted in Figure 3 and Figure 4. As far as the measurement model is concerned, the data in this study exhibit a satisfactory level of fit ($\chi^2/\text{df} = 2.096$, GFI = 0.90, RMSEA = 0.063, CFI = 0.950, TLI = 0.940 and AGFI = 0.870). Moreover, all 18 items were significant and loaded as

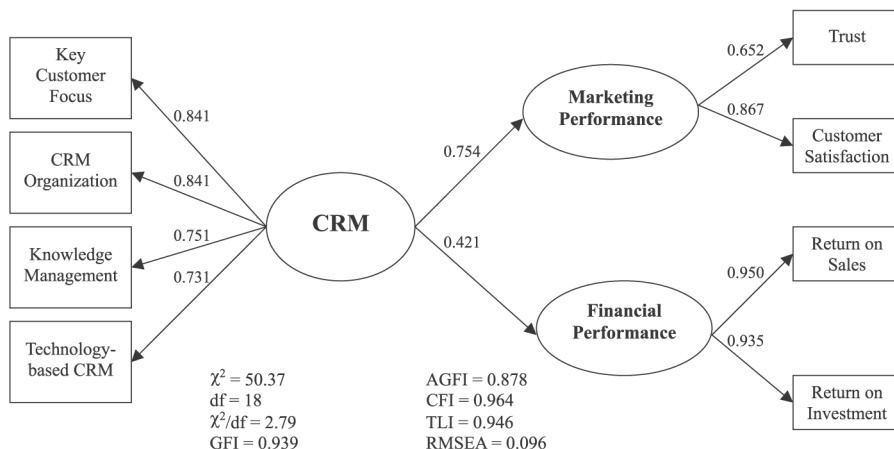


Figure 4.
Nomological validity

predicted on their respective factors. These results provide further evidence to suggest that the proposed scale developed in this study is a reliable operational measure for CRM in a variety of industries.

Then, our structural model, as depicted in Figure 4, was tested. Our data support the assertion that there is a positive correlation between CRM and marketing performance ($r = 0.565$, $p < 0.01$), as well as financial performance ($r = 0.550$, $p < 0.01$).

In sum, the results are encouraging in terms of scale generalizability. The 18-item CRM scale proposed in this study was found to have a high degree of reliability and validity. We are convinced of the fact that not only can our CRM scale be applied to financial industry, but it can also be generalized to a wide array of industries, ranging from manufacturing to services.

Discussion

This paper reports a series of studies on the development and validation of a measure of CRM. The CRM scale was found to demonstrate a high degree of reliability and validity. Despite the increasing research attention paid to the concept of CRM, to date, there has been no valid and comprehensive operational measure of CRM. To the best of our knowledge, this is the first study to provide a comprehensive, psychometrically sound, and operationally valid measure of a firm's CRM.

Academic and managerial implications

The present study makes both academic and practical contributions, and suggests several applications for the research. Our academic contribution is to offer a significant advance to the current literature of CRM by affording an integrative framework to thoroughly understand how the "elusive" CRM concept can be translated into an array of actionable organizational dimensions. First, we explore the nature of CRM, provide a clear conceptualization of the construct, CRM, and then develop a conceptual model with four behavioral components, namely, key customer focus, CRM organization, knowledge management, and technology-based CRM. Though some of the ideas expressed in this conceptual model may be familiar to marketers, its value is in integrating these various notions to provide a more comprehensive and holistic picture of CRM. Second, we provide empirical evidence on the testable scales that are both reliable and valid. This gives a new theoretical insight into how CRM can be generated. Third, the model was empirically tested and found to have substantial association with a firm's business performance, indicated by trust, customer satisfaction, ROI, and ROS. Our conceptualization and empirical findings are encouraging. We have provided a useful foundation on which further theoretical and empirical research of CRM can be built.

For marketing practitioners, our study emphasizes that not until there is a deft orchestration of all four behavioral components will superior CRM performance be realized (Day, 2003). Marketing practitioners should convince top management of the paramount importance of maintaining a genuine key customer focus to make the firm become indispensable to customers (Vandermerwe, 2004). Switching costs then become significant to customers (Burnham *et al.*, 2003) so that customer loyalty is a likely outcome. With top management support on maintaining an overwhelming customer focus (Hart, 1999), internal processes and culture should be customer-centric so that customer relationships can be strengthened (Lavender, 2004). Marketing practitioners should help spread the virtues of being truly customer-centric via internal marketing

efforts. Frontline employees should be empowered so that they can have latitude over their service activities and abilities to address specific customer needs to act in a fully customer-centric manner (Hart *et al.*, 1990). Moreover, proactive sharing on customer knowledge should be instigated to leverage the value of learnt customer preferences and needs. This requires that various communication channels be provided, often through top management dedication of organizational resources to install state-of-the-art technology components.

Our findings validate the long-held belief that CRM is a critical success factor for business performance. Firms wishing to improve their relationships with customers need constantly to monitor their behavior and internal processes. The proposed scale could be used as a diagnostic tool to identify areas where specific improvements are needed, and to pinpoint aspects of the firm's CRM that require work. For the results of an exercise to be meaningful, some benchmarks or norms should be used as a basis for comparison. For example, external benchmarking at the industry level can provide a more meaningful comparison with major competitors. In addition, periodic measurement of a firm's CRM could help managers track changes over time. Other than the applicability of the model in the monitoring process, the four components in the CRM model may serve training needs by assisting human resource managers to develop appropriate training programs that can help improve the staff's understanding of the activities involved in implementing CRM. Furthermore, top management may use this framework to develop relevant and effective marketing strategies and tactics. Functional managers can also use the framework to set clear policies that develop and consider CRM as a necessary and essential business process rather than a burden on the staff. Changing the corporate culture and reward system accordingly reinforces behavior that creates strong CRM, and should also be considered.

More specifically, we find that the favorable impact of CRM on marketing performance is larger than that on financial performance, especially for the financial industry (0.754 vs 0.421). This result is not surprising because CRM is grounded on the principles of relationship marketing. Managers, therefore, can effectively boost their marketing performance (trust and customer satisfaction) through proper implementation of CRM. In fact, when marketing performance like trust and customer satisfaction is improved, financial performance is likely to be improved accordingly: through CRM, customer relationships can be effectively managed and nurtured as important assets in an effort to improve customer retention and thus profitability (e.g. Gruen *et al.*, 2000; Payne, 2000; Ryals and Knox, 2001; Ryals and Payne, 2001; Sheth and Sisodia, 2001).

Limitations and directions for future research

Our study represents a first attempt to build and test a conceptual framework of CRM. The present findings are therefore indicative rather than conclusive. However, this study suggests some future research directions for studying CRM. First, it would be useful to further assess the generalizability of the CRM model developed in this study to other business environments, for example, the adoption of CRM in other nations, such as the USA and European countries. Relationship marketing and CRM mean different themes and perspectives in different cultures and marketers should be as wary of prescribing universal framework to implement the essence of these concepts

(Palmer, 1997). With more replicative and creative research, a more comprehensive conceptual framework related to CRM can be developed in the future.

Second, although the results of this study do provide support that CRM has a positive influence on business performance, it is important to note that business performance is a multi-dimensional construct that may be characterized in a number of ways, including effectiveness, efficiency, and adaptability (Walker and Ruekert, 1987). Therefore, it would be useful to explore the complexities of the relationship between CRM and alternative dimensions of business performance in future studies.

Third, the determinants (i.e. antecedents) of CRM also require both theoretical and empirical investigation; after all, managers need to know how they can be instrumental in shaping the CRM of their firms.

Fourth, previous studies have suggested that differences in the market environments of different countries may influence the types of strategies developed and adopted by companies, as well as the impacts of these strategies on business performance (Douglas and Craig, 1983; Freeman and Schendel, 1974; Manu, 1992; Schneeweis, 1983). Future studies should examine the moderating effect of environmental factors (e.g. market turbulence, competitive hostility, and market growth) on the association between CRM and business performance.

Fifth, data for this study were collected by the key informant approach. Although managers as key informants are adequate sources for reliable and valid data (Tan and Litschert, 1994), the information generated by a firm is not the only source of information about its level of CRM. Clearly, it is important to contrast a firm's degree of CRM as assessed by internal information (e.g. managers' responses to questionnaires, as we have done in this study) with the firm's level of CRM as perceived by its customers, competitors, and distributors. This is possibly another challenging area of future research in CRM.

Sixth, cross-sectional data were used in this study. Consequently, the time sequence of the relationships between CRM and business performance cannot be determined unambiguously. The results, therefore, may not be interpreted as proof of a causal relationship, but rather as lending support for a prior causal scheme. The development of a time-series database and testing of the CRM association with performance in a longitudinal framework would provide more insights into probable causation.

On the whole, continued refinement of the CRM scale proposed and supported in this study is, undoubtedly, possible and even desired, based on further research and changes in business environments. Such refinements and modifications could necessitate the inclusion of new items, or the deletion of original items. In some cases, our hypothesized factor structure may need modifications. Although we sought to cover all relevant aspects of CRM by carefully examining the CRM literature, we recognize that there may be specific aspects of CRM that may have been overlooked or that may become relevant as new trends in managing customer relationships emerge and evolve. To keep abreast with the ever-changing business environments, researchers are strongly urged to incorporate these relevant aspects in the scale into their future research, so that a valid measure of CRM can be ensured on an ongoing basis.

Notes

1. A total of 15 managers were interviewed. Nearly all of them thought that they had problems with implementing CRM properly. Looking back, they pointed out that they had

oversimplified the whole idea of CRM by having treated CRM as a mere information system problem without a proper review of what it actually is, and how CRM fits with the overall corporate strategy. On the whole, their corporate CRM systems have been under utilized, and have not achieved the initial targets established for them.

2. In 2003, total lending of the financial sector accounts for 148.1 percent of the GDP (please see <http://home.aigonline.com/content/0,1109,17267-784-ceo,00.html>).

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Appendix 1. Final CRM scale items

Key customers focus

- (1) Through ongoing dialogue, we work with individual key customers to customize our offerings.
- (2) My organization provides customized services and products to our key customers.
- (3) My organization makes an effort to find out what our key customer needs.
- (4) When my organization finds that customers would like to modify a product/service, the departments involved make coordinated efforts to do so.

CRM organization

- (1) My organization has the sales and marketing expertise and resources to succeed in CRM.
- (2) Our employee training programs are designed to develop the skills required for acquiring and deepening customer relationships.
- (3) My organization has established clear business goals related to customer acquisition, development, retention, and reactivation.
- (4) Employee performance is measured and rewarded based on meeting customer needs and on successfully serving the customer.
- (5) Our organizational structure is meticulously designed around our customers.

Knowledge management

- (1) My organization's employees are willing to help customers in a responsive manner.
- (2) My organization fully understands the needs of our key customers via knowledge leaning.

- (3) My organization provides channels to enable ongoing, two-way communication with our key customers and us.
- (4) Customers can expect prompt service from employees of my organization.

Technology-based CRM

- (1) My organization has the right technical personnel to provide technical support for the utilization of computer technology in building customer relationships.
- (2) My organization has the right software to serve our customers.
- (3) My organization has the right hardware to serve our customers.
- (4) Individual customer information is available at every point of contact.
- (5) My organization maintains a comprehensive database of our customers.

Appendix 2. CRM development statements

- (1) My organization fully understands the needs of our key customers via knowledge learning.
- (2) Our competitive advantage is based on building and maintaining long-term customer relationships.
- (3) Customers can expect prompt service from employees of my organization.
- (4) My organization provides channels to enable ongoing, two-way communication with our key customers and us.
- (5) My organization is well organized and integrated internally to suit the needs of our customers.
- (6) My organization shares customer information across all points of contact.
- (7) Any changes or actions deemed necessary would be implemented to the benefits of our customers.
- (8) Our computer technology can help create customized offerings to our customers.
- (9) Our top management team accepts and provides leadership for the building and maintaining customer relationships as a major goal of my organization.
- (10) My organization regularly assesses the lifetime value of each customer.
- (11) My organization maintains a comprehensive database of our customers.
- (12) My organization makes concerted and coordinated efforts among functions to satisfy our customers.
- (13) Any new knowledge about key customers would be well received and used to provide better offerings to customers.
- (14) My organization commits time and resources in managing customer relationships.
- (15) My organization customizes customer interactions to optimize value and loyalty.
- (16) We have mechanisms to encode new knowledge about our customers into formal rules or policies that can be shared between organizational participants and organizational subunits.
- (17) When my organization finds that customers would like to modify a product/service, the departments involved make concerted efforts to do so.
- (18) My organization has the sales and marketing expertise and resources to succeed in CRM
- (19) My organization involves our key customers in product design.

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- (20) Customer-centric performance standards are established and monitored at all customer touchpoints.
 - (21) New knowledge acquired at various touchpoints of our organization is codified so that the new knowledge can be disseminated and shared easily amongst all staff.
 - (22) My organization has established clear business goals related to customer acquisition, development, retention and reactivation.
 - (23) Our organizational structure is meticulously designed around our customers.
 - (24) My organization treats each key customer differently.
 - (25) The technical/production/operation people treat customers with great care.
 - (26) My organization commits time and resources towards customer needs by providing value.
 - (27) My organization makes an effort to find out what our key customer needs.
 - (28) My organization has the technical expertise and resources to succeed in CRM.
 - (29) My organization provides customized services and products to our key customers.
 - (30) My organization exchanges information with our key customers frequently.
 - (31) All employees in my organization understand and share the common goal of building and maintaining customer relationships.
 - (32) Through ongoing dialogue, we work with individual key customers to customize our offerings.
 - (33) CRM responsibilities of each employee are clearly defined, assigned and understood.
 - (34) My organization believes that mining data intelligently is a source of competitive advantage.
 - (35) The service department gives key customers priority.
 - (36) Our top management team spends much time with key customers.
 - (37) Our employee training programs are designed to develop the skills required for acquiring and deepening customer relationships.
 - (38) My organization continuously monitors and maintains our customer information.
 - (39) Our information systems are designed to give comprehensive data about all aspects of our customers, so that we can be responsive to them.
 - (40) Our business objective is primarily driven by customer relationships.
 - (41) My organization learns our customers' preference through their past interactions.
 - (42) Employee performance is measured and rewarded based on meeting customer needs and on successfully serving the customer.
 - (43) IT facilitates the management of customer relationships.
 - (44) Knowledge is shared to leverage the value of customer information.
 - (45) My organization has a clearly defined mission and business strategy, driven by customer needs and the performance of customer relationships.
 - (46) My organization has sound mechanisms for effective knowledge dissemination.
 - (47) My organization has the right hardware to serve our customers.
 - (48) My organization's employees are willing to help customers in a responsive manner.
 - (49) Customers can expect that my organization's employees are not too busy to respond to customer requests promptly.
 - (50) Customer lifetime value is the essential criterion for key customer selection.

- (51) Customers can expect exactly when services will be performed.
- (52) My organization understands individual customer's character, needs and preferences and behaviors through past interactions with us.
- (53) My organization has the right software to serve our customers.
- (54) Individual customer information is available at every point of contact.
- (55) My organization has the right technical personnel to provide technical support for the utilization of computer technology in building customer relationships.
- (56) My organization has processes to identify key customers.
- (57) My organization has clear objectives and strategies for key customers.
- (58) My organization has the service resources and excellence to succeed in CRM.
- (59) We have mechanisms that transform locally acquired new knowledge into organization-level knowledge.
- (60) Our management and staff are resistant to change.
- (61) My organization gives each key customer individual attention.
- (62) My organization frequently and systemically measures customer satisfaction.
- (63) My organization vigorously channels time and resources towards achieving loyalty.
- (64) Our customers inherently recognize the value that we place on their ongoing relationships.
- (65) Investments in customer relationships are based on the lifetime value of each customer to my organization.
- (66) Senior managers are tasked with ensuring that the organization is meeting key customers' needs.
- (67) My organization treats all customer communications seriously and views them as important.
- (68) My organization manages all customer communications so that they are consistently superior and relevant to the customer.
- (69) Policies and procedures critical to managing customer relationships are well documented and consistent across all customer touchpoints.
- (70) Customer-centric functions are staffed with well-trained and motivated employees.
- (71) Customer metrics are used to facilitate strategy formulation and decision-making.
- (72) Customer feedback is used to create strategies conducive to positive customer perceptions.
- (73) Budgets are made on the basis of periodically evaluating the performance of customer metrics.
- (74) Our positioning is consistent across all marketing, sales, and service channels.
- (75) My organization has a process in place to obtain and validate customers' permission to interact with them through various channels.
- (76) Our marketing, sales, and service areas cooperatively determine integrated customer contact strategies that vary by individual.
- (77) Customer relationships are the crux of our existence.
- (78) My organization embraces CRM for mutual benefits.