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The impact of loyalty with e-CRM software and e-services

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Keywords *Relationship marketing, E-commerce, Customer loyalty, Consumer behaviour, Computer software*

Abstract *E-service is a critical strategic marketing consideration today for many firms, based largely on the promise of more cost-effective models of self-service relative to large (and expensive) call centers for technical support and customer service. The rapidly emerging electronic customer relationship management (e-CRM) industry provides the primary tools for implementing e-service. Interestingly, the e-CRM industry faces the same challenges and strategic marketing considerations as their organizational customers, in that they must deliver exceptional service and support to the companies purchasing/using e-CRM software. A review of organizational mission/vision statements suggests that e-CRM companies are generally positioning themselves as exemplars of customer satisfaction provision and relationship management. However, recent industry analysis suggests that their organizational customers generally report low to ambivalent ratings on customer satisfaction measures (our study also supports these findings). This discrepancy could be partly attributed to very little empirical inquiry having appeared to date to assess the efficacy of existing relationship marketing theories within this fast-moving industry. The current study provides an exploratory investigation that looks at the well-established (in other marketing settings) relative influences of quality, customer satisfaction, and loyalty in the formation of future purchase intentions and word-of-mouth behaviors within the e-CRM industry. Concludes that e-CRM marketers must first identify means of increasing the overall level of customer satisfaction within their industry, and then begin to consider moving beyond customer satisfaction toward broader loyalty-based strategic marketing objectives to support their relationship marketing practices. Practitioner and research implications of the reported study are discussed.*

Introduction

Technology in general, and the Internet in particular, are having a profound effect on service marketing (Bitner *et al.*, 2000). De Ruyter *et al.* (2001, p. 186) argue that the next vista for organizations operating in virtual marketplaces will involve e-service, which they define as ". . . an interactive, content-centered and Internet-based customer service, driven by the customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer-service provider relationship". Thus, e-service is viewed as an emerging mechanism for achieving customer relationship management strategic outcomes. E-service is largely being implemented through the use of electronic customer relationship management (e-CRM) software. The following study supports the objectives of this special issue by providing an exploratory test of traditional consumer-based service/relationship marketing theory and measures within the emerging e-CRM industry. We assess the research model relative to both e-CRM software products and service support.

Part of the attractiveness of e-service for service marketers is the ability to shift some of the burden of after-sale service and support to end users via the

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Internet. Many marketers hope to eventually replace traditional mechanisms for after-sale service such as large (and expensive) customer support/service call centers with digital forms of e-service (e.g. e-mail support protocols, online chat, FAQ's, and online knowledge bases). The mechanism for the transition to digital forms of e-service is e-CRM software that directly links an end user with a marketer's human support resources and/or knowledge base[1,2]. This orientation helps to make clear the linkages between e-service, e-CRM, and relationship marketing. Companies today are increasingly providing customer service, in support of relationship marketing strategic objectives, with the help of technology via e-service (Barnes *et al.*, 2000; Mueter *et al.*, 2000). e-CRM software suites provide the mechanism by which companies hope to begin to more efficiently and efficaciously provide such e-service at a lower cost.

Not surprisingly, a review of the organizational mission statements of many e-CRM software/service providers suggests that they are living organizational exemplars of effective relationship marketing practices. However, in spite of the diligent efforts of marketers worldwide to implement e-CRM in support of e-service strategies, the emerging evidence suggests that online marketers are often receiving poor marks. An Accenture (2001) study discovered that, while the B2C market has had many high-profile customer service issues, the level of customer satisfaction online is generally lower in B2B than it is in B2C[3]. The report refers to this as symptomatic of a failure to identify and respond to the real demands of the market. CRM Guru (2001) has recently reported an initial industry-wide satisfaction study, which identifies poor to ambivalent customer satisfaction ratings for virtually all providers of CRM software and services. In the USA, online retailers will also lose approximately $20.7 billion in 2001, due to poor online customer service (Datamonitor, 2001)[4]. Therefore, it is not surprising that consumer complaints about online retailers in the USA more than doubled in 2000 (NACAA, 2001). These patterns within the US e-CRM industry appear consistent with European marketing experiences[5].

Consequently, it appears we have a marketing dilemma in that customer reality does not appear to jibe with the strategic relationship marketing objectives of the e-CRM industry. In other words, the relationship marketing tactics underlying the e-CRM industry's products and services to date may not be fully producing desirable relationship marketing outcomes (e.g. customer satisfaction, loyalty, future behavioral intentions). How do e-service marketers change this marketplace reality? We argue that marketing research designed to better understand the process by which organizational decision makers evaluate and judge e-CRM products and services is a useful first step toward the development of marketing strategies and tactics that will lead to better relationship marketing outcomes over time based on e-service.

Our exploratory study concerns the identification and empirical testing of a model based on well-established relationship marketing constructs to guide theory and practice in this new and fast-changing competitive setting. We believe that this need is particularly important for the emerging e-CRM industry as this industry must be able to support the efficacy of their products

and services in achieving relationship marketing strategic objectives if e-service is to continue to grow as a viable marketing tactic. The organizations within this industry can most effectively achieve this end by demonstrating their ability to be exemplars of relationship marketing efficacy in their own marketing relationships with the purchasers of e-CRM software and service. Therefore, we empirically assess our research model within the context of an e-CRM software/service provider's own relationships with their customers.

Our proposed study is consistent with the purpose of this special issue in that we model how relationship marketing constructs operate within the key organizational decision makers who are purchasing e-CRM software and services. We validate our hypothesized model with a census of the customers of an e-CRM software/service provider in terms of judgments related to both the e-CRM software products themselves, as well as the e-CRM software provider's ability to provide after-sale service and support. Bobbitt and Dabholkar (2001) have specifically called for greater academic research into the theoretical underpinnings of technology-based self-service. This special issue further demonstrates the need for such inquiries.

The remainder of the manuscript is divided into four sections. First, a research model is presented based on the weight of the existing marketing literature. The research model incorporates emerging knowledge from the CRM, services, and relationship marketing literatures. Second, the methods used to empirically test the proposed research model are presented and discussed. Third, the results of statistical analyses are articulated. Finally, conclusions and recommendations are offered for consideration by service marketers.

A relationship marketing research model for e-CRM products and services

The ultimate purpose of e-CRM products and services is to help firms build better customer relationships and maximize a customer's lifetime value. In fact, Kalakota and Robinson (2001, p. 171) state that within the context of e-CRM ... "The timely delivery of excellent service is customer relationship management". The growing focus on e-CRM underscores the relationship marketing foundations of e-service practices, an important area of recent academic inquiry[6]. Parvatiyar and Sheth (2000, p. 9) review the literature to date and conclude with an overall definition of relationship marketing as "... the ongoing process of engaging in cooperative and collaborative activities and programs with immediate end-user customers to create or enhance mutual economic value at a reduced cost". Readers should be aware that alternative perspectives exist, which are articulated in Parvatiyar and Sheth (2000). In addition, Payne (2000) argues that the European perspective of relationship marketing is arguably broader in domain than the (USA) perspective identified above. However, it appears clear that for purposes of the current research that a general relationship-based behavioral model can be assessed within the e-CRM industry that focuses on the customer-centric long-term orientation common to

all of the alternative relationship marketing perspectives. The proposed research model represents an initial attempt to model behavioral intentions based on relationship influences within the e-CRM industry in an integrated fashion similar to Oliver's (1997) more general and comprehensive model of consumption processing.

So, what are the constructs and relationships that would be important in the development of an initial customer-centric, relationship-based model that reconciles relationship marketing with e-CRM products and services? The current research is based on well-established theoretical relationships across service settings (see below), and focuses on the following constructs and their relationships: subjective disconfirmation, quality, satisfaction, loyalty, and behavioral and word-of-mouth intentions. Please note that the value of the current research lies less with establishing new relationships within the general service literature; rather, in testing whether known relationships in other service settings can assist e-service marketers in better understanding and utilizing the key tool of e-service – e-CRM software. Such understanding appears timely and valuable given the poor evaluations of e-CRM software suites to date. We suggest that, given the relatively poor evaluations of e-CRM software products and service, coupled with the importance of e-CRM software as the key tool of e-service, models such as we evaluate herein appear important to the promulgation of e-service practices. In other words, if e-CRM software fails to be accepted due to poor performance, there is less likelihood that e-service will play a fundamental role in relationship marketing practices over the foreseeable future.

Figure 1 presents the theoretical model we assess in this study. It is important to place the model depicted in Figure 1 into the appropriate context. Aberdeen (2001) argues that software applications constitute core and critical components of e-CRM application suites and e-service offerings. Such e-CRM software suites are often technically challenging to introduce into an organization, and generally require a significant level of both initial and ongoing customer support from the producers of e-CRM software suites. In other words, if a retailer wishes to start offering e-service through their company Web page system (e.g. online customer service via chat, dynamic

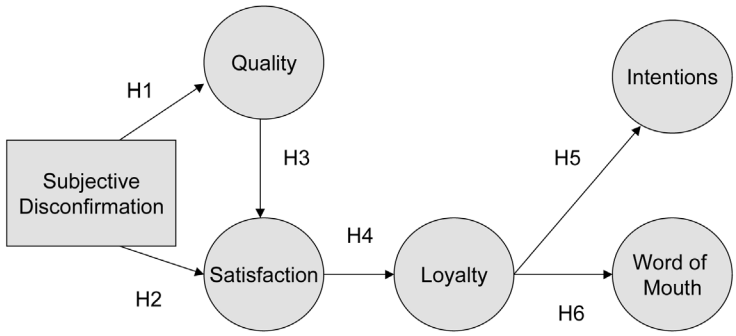

Figure 1.
The research model

knowledge bases, etc.), they will likely have to endure a complicated and technically challenging process of integrating the new e-CRM software into their own network system. Thus, the model depicted in Figure 1 can be applied to two evaluative settings: the software suite itself and the e-service provided by the software suite developer to assist organizational customers in implementing the complicated software within their own Web network systems. Customers' perceptions of e-CRM "products" essentially involve some combination of their judgments related to the software itself and the support the e-CRM company provides in implementing and maintaining the e-CRM software suite[7].

The first three model constructs (subjective disconfirmation, quality and satisfaction) share a long history of being considered relative to one another in the marketing literature[8]. The authors adopt Oliver's (1997) interpretation of the appropriate constitutive and operational definitions of these constructs, as well as our hypotheses related to their relative causal orderings. Subjective disconfirmation can be defined as a comparative process by consumers between performance evaluations and some pre-performance standards. While many standards can be applied, we chose three of the most widely used for the study herein, including expectations, predictions, and relative to competitive offerings. Subjective disconfirmation has been related in the literature to both quality perceptions and satisfaction judgments.

Quality can be defined as "excellence". Dabholkar (2000) argues that within service contexts, the evidence supports an assertion that customers who view technology-based service as easy-to-use, reliable, and enjoyable also perceive higher service quality in such technology-mediated service offerings (i.e. e-service). Perceived service quality is believed to contribute to positive business outcomes such as greater levels of customer satisfaction and, by extension, favorable marketing behaviors such as repurchase and positive word-of-mouth behaviors.

Satisfaction, on the other hand, is the consumer's fulfillment response (Oliver, 1997). Szymanski and Hise (2000) argue for the importance of e-satisfaction in technology-mediated relationships. These authors suggest that the conceptual domain of e-satisfaction appears similar to that understood from the general marketing literature. This assertion further supports our reliance on Oliver's (1997) constitutive definitions for purposes of the current research. In addition, satisfaction judgments are generally believed to be superordinate to quality perceptions (Cronin and Taylor, 1992; Oliver, 1997). This leads to the first three research hypotheses:

H1. Subjective disconfirmation is positively related to perceptions of quality.

H2. Subjective disconfirmation is positively related to satisfaction judgments.

H3. Perceptions of quality are positively related to customer's satisfaction judgments.

Loyalty to business partners who use the Internet in electronic exchanges similarly seems an important contributor to Internet use and e-commerce. Griffin (1996) argues that customer loyalty is one of the most significant contributors to the bottom line in a technology-mediated environment. Reichfeld and Schefter (2000) argue that loyalty is a more important customer consideration than even price. In fact, these authors present evidence that there is a high cost associated with low levels of loyalty in e-commerce.

Loyalty is a sophisticated construct. Oliver (1999, p. 33) asserts: "It is time to begin the determined study of loyalty with the same fervor that researchers have devoted to a better understanding of customer satisfaction". The reported research attempts to contribute to this cause. Oliver (1999, p. 34) distinguishes satisfaction (i.e. pleasurable fulfillment) from loyalty, which he defines as ". . . a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same-brand set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviors"[9]. Morgan (2000) suggests that the term "loyal" can be interpreted in different ways, ranging from affective loyalty ("what I feel") to behavioral loyalty ("what I do"). In this study we operationalize loyalty at the global level of analysis to accommodate these perspectives.

The relationship between satisfaction and loyalty has also enjoyed a measure of attention in the recent literature. Hart and Johnson (1999) state, ". . . customers are loyal when they have been consistently satisfied over time". These authors envision loyalty as superordinate to satisfaction in that loyalty can capture long-term relationship elements that lie outside the domain of satisfaction in a B2B context (also see Barnes *et al.*, 2000). This B2B perspective appears consistent with Heskett *et al.* (1997) and Hunter (1997) who assert that the three primary measurements of customer loyalty include:

(1) the stream of revenues and profits from retention of loyal customers;

(2) repeat sales; and

(3) referrals (commonly known as the three Rs).

From a practitioner perspective, Pastore (2001) suggests that customer loyalty and satisfaction will continue to play key roles as companies evaluate spending budgets based on a study by NFO Prognostics (proprietary). In fact, while the study suggests that satisfaction scores and referencability ratings are generally strong; many professional service buyers are "shopping around" with each new IT project. Such "shopping around" behavior is an indicant of a weak marketing relationship. This finding strengthens the basic premise of the study reported herein calling for relationship-marketing-based models specific to the e-CRM industry. In summary, the weight of the evidence to date suggests that e-satisfaction should be subordinate to loyalty in the formation of customer behaviors. The relative order of these constructs in our model is important, because even if e-CRM marketers can improve satisfaction levels with e-service

marketers, they still may not enjoy the competitive advantages associated with truly long-term relationship marketing initiatives (e.g. loyalty, repurchase, and positive word-of-mouth behaviors). This forms the basis for our fourth research hypothesis:

H4. Customer loyalty is superordinate to customer satisfaction in an e-CRM B2B environment.

The final two hypotheses relate to expected outcomes from loyal customers, whether they are individual consumers or organizational buyers. Assuming a base level of satisfaction, we would expect loyal customers to engage in activities that support and strengthen their relationship with the sponsoring e-CRM company, as well as engage in positive word-of-mouth activities within their own professional community (Taylor, 1997). Our last two hypotheses test these assertions:

H5. Customer loyalty is positively related to behavioral intentions.

H6. Customer loyalty is positively related to word-of-mouth behaviors.

In the next section we will discuss the specifics of data collection, including a description of our population, our census list, data collection strategy, and the methods employed to empirically assess the proposed research model and hypotheses presented in Figure 1.

Methods

Data collection

In preparing our research methods, one of the first question that we addressed was how best to capture the necessary survey data. Based on comments related to a previous study by the sponsoring e-CRM organization, a determination was made to employ a Web-based questionnaire to capture study data. The Web-based questionnaire automatically placed the responses into an access database. In addition, e-mail notification was determined by the sponsoring e-CRM organization executives to be the preferred method of corresponding with the sampling frame in order to solicit their participation in the study. A philanthropic appeal was identified wherein the sponsoring e-CRM organization agreed to contribute $1,000 to one of eight charities based on the votes of respondents.

Thus, this study used an online survey-based questionnaire in order to collect data to assess the research model. The questionnaire used nine-point Likert-type scale items to capture all of the constructs identified in Figure 1. The online survey instrument was created using FrontPage. The final survey instruments used in the study were pre-approved by the appropriate sponsoring organization representative prior to actual data collection.

The population of interest was all of the sponsoring e-CRM organization's existing customers. Thus, we were provided a list of all current customers of the sponsoring e-CRM organization in an Excel spreadsheet in October 2001, as

a census list. This list originally had approximately 8,900 names. However, once names without e-mail addresses and duplicates were removed, our final sampling frame was comprised of 3,810 (e-mail) names and addresses. Thus, we conducted a census of the sponsoring e-CRM organization customers who had provided valid e-mail addresses.

The e-mail addresses were sorted alphabetically, and then alternatively assigned by groups of 90 to each of the two surveys (software versus service). This strategy served to essentially randomize participants between the two surveys. However, we received back 1,454 undeliverable e-mails, which reduced our total sampling frame to 2,356 valid customer notifications. The bounced-back e-mail addresses were compiled and forwarded to the sponsoring e-CRM organization in order to help clean up their customer database[10].

Measures used in the study

The measures used in the current research can be found in the Appendix. These measures are based on the literature (the Appendix identifies the sources), and discussions with the relevant managers within the participating e-CRM organization. All of the constructs were measured at the global level of analysis. Readers should also be aware that we used a limited number of measures (four to five items) for each construct based on concerns by the sponsoring organization's managers related to response rates.

Statistical methods to be employed in the study

A number of statistical techniques were employed in the study, most of which are available through the SPSS statistical software package. For example, descriptive measures and frequency analyses were conducted to identify miscodes and blunders as well as to determine distributional properties of the scales used in the study. The research hypotheses were then tested using structural equation analyses using LISREL 8.51. Covariance matrices were analyzed in all cases using LISREL. Institutional Research Board (IRB) approval was gained by the sponsoring academic organization prior to data collection and analyses. In addition to measuring the variables in our research model, a demographics section was included in the survey instrument in order to ascertain the level of representativness of our obtained sample. Table I presents the demographic variables captured in both survey instruments. Managers from the sponsoring e-CRM firm stated that our obtained response appeared quite representative of their customer base. The next section presents the study results.

Results

We tested our research model relative to perceptions and intentions about the e-CRM software itself, as well as the associated service provided with the e-CRM software. We believe that both considerations are important in forming an overall brand evaluation. Thus, while we hypothesize that the general relationships will be similar across these two research settings, we

Variables	Categories
Gender	1 = Male 2 = Female
Education	1 = HS or less 2 = Some college 3 = College graduate 4 = Masters degree 5 = PhD or equivalent
Customer_Type	1 = Customer 2 = System integrator 3 = Other
Revenues	1 = Less than $25 million annually 2 = $25 to $49 million annually 3 = $50 to $99 million annually 4 = $100+ million annually
Employees	1 = Less than 100 employees 2 = 100 to 249 employees 3 = 250 to 499 employees 4 = 500 to 1,000 employees 5 = 1,001 to 2,500 employees 6 = 2,501 to 5,000 employees 7 = Greater than 5,000 employees
Position	1 = XYZ product or service user 2 = IT department 3 = Business systems department 4 = Decision maker
Function	1 = Marketing 2 = Information technology 3 = Customer service 4 = Sales
Eight individual products by name	
Personal_user	1 = I have never personally used a XYZ product 2 = Less than 6 months 3 = 6 months to 1 year 4 = More than 1 year
Org_user	1 = Less than 6 months 2 = 6 months to 1 year 3 = More than 1 year
Raffle	1 = United Way September Fund 2 = United Way General Fund 3 = Salvation Army 4 = American Red Cross 5 = Make a Wish Foundation 6 = American Cancer Society 7 = American Diabetes Association 8 = ABC Marketing Student Scholarship Fund

Table I.
Demographic variables

disaggregate our results to allow for the identification of differences that might exist between product (software) and associated service provision in terms of our research model constructs.

Response characteristics, reliability and validity of the measures

Tables II and III present the results of our descriptive analyses. We received 143 usable responses for our software survey, and 140 for the service sample. This represented a 12 percent response rate. We deem this response rate as acceptable for the following reasons. First, we conducted power analyses and determined that sufficient power exists to minimize the chance of erroneous conclusions (Power > 0.9)[11]. Murphy and Myors (1998) state that power above 0.80 is usually judged to be adequate for social science research. Second, Tables II and III demonstrate that the standard error of the mean calculations appear acceptable for further analyses (Burns and Bush, 2000). However, and not surprisingly, the data does not appear to be perfectly normally distributed (Peterson and Wilson, 1992). Consequently, we normalized the data for purposes of conducting hypothesis tests using the Prelis component of LISREL 8.51. In addition, the mean values of our direct measures of model constructs (based on nine-points scales) suggests a general level of ambivalent to negative perceptions associated with our model constructs. These results support those previously alluded to in the CRM Guru Satisfaction study we previously discussed.

We next assessed the reliability and validity of the measures. Turning first to issues related to reliability, Table IV demonstrates that the scales for the model variables exceed the traditional criteria for Coefficient $\alpha > 0.7$. However, because we employ structural equation modeling in the analyses, we were obligated to further assess the measurement model fit. Hair *et al.* (1998) suggest two steps. First, we investigated whether all variables used for analyses were significantly related to their specified constructs, which we found to be true. Second, these authors assert that reliability estimates and variance-extracted measures should be calculated for each construct in Figure 1. Table IV presents these results and demonstrates that in all cases our construct measures exceeded a reliability standard of > 0.7, thus, we are confident in the reliability of our measures.

We next assessed the validity of our measures. Given that the measures derived from previous studies, there appears to be a measure of face and content validity. Raines-Eudy (2000) states that the calculated shared variance scores in Table IV are sufficient evidence for construct validity. The calculated variance-extracted scores exceeded the 50 percent recommended criteria for all model constructs. Thus, we are confident in the validity of our measures as well.

One area that merits further discussion before moving on to the results concerns potential multicollinearity among the model indicators. Table V presents a correlation matrix of the averaged construct indicators and demonstrates high intercorrelations among the predictors. This finding is a

Table II.
Service survey variable descriptive results

Variables	Mean	Std dev.	Skew	Kurtosis	Standard error (SE)	SE range low	SE range high
Disconformation 1	4.0809	2.1673	0.144	–0.791	0.1858	3.716732	4.445068
Disconformation 2	4.1926	2.057	0.009	–0.731	0.177	3.84568	4.53952
Disconformation 3	4.5	2.0693	–0.058	–0.685	0.1788	4.149552	4.850448
Quality 1	4.2519	2.3681	0.094	–1.243	0.2038	3.852452	4.651348
Quality 2	4.2353	2.3703	0.155	–1.221	0.2033	3.836832	4.633768
Quality 3	3.9185	2.3754	0.279	–1.022	0.2044	3.517876	4.319124
Satisfaction 1	3.9044	2.2897	0.338	–1.002	0.1963	3.519652	4.289148
Satisfaction 2	4.2206	2.4606	0.194	–1.219	0.211	3.80704	4.63416
Satisfaction 3	4.6912	2.3555	–0.132	–1.034	0.202	4.29528	5.08712
Satisfaction 4	4.0221	2.3205	0.190	–0.941	0.199	3.63206	4.41214
Loyalty 1	4.4672	1.9022	–0.204	–0.594	0.1625	4.1487	4.7857
Loyalty 2	4	2.0406	0.060	–0.837	0.1756	3.655824	4.344176
Loyalty 3	4.0296	2.1123	0.094	–0.881	0.1818	3.673272	4.385928
Loyalty 4	4.2985	2.0884	0.240	–0.519	0.1804	3.944916	4.652084
Purchase intention 1	4.0821	2.2646	–0.002	–1.165	0.1956	3.698724	4.465476
Purchase intention 2	5.0441	2.309	–0.321	–0.871	0.198	4.65602	5.43218
Purchase intention 3	3.7299	2.2865	0.356	–0.1046	0.1953	3.347112	4.112688
Purchase intention 4	5.0949	2.3291	–0.438	–0.847	0.199	4.70486	5.48494
Word of mouth 1	4.5556	2.5935	0.057	–1.223	0.2232	4.118128	4.993072
Word of mouth 2	4.6397	2.4394	0.069	–0.926	0.2092	4.229668	5.049732
Word of mouth 3	4.0075	2.354	0.336	–0.967	0.2034	3.608836	4.406164
Word of mouth 4	3.5809	2.39	0.381	–1.192	0.2049	3.179296	3.982504

Variables	Mean	Std dev.	Skew	Kurtosis	Standard error (SE)	SE range low	SE range high
Disconformation 1	4.6154	2.0277	−0.086	−0.725	0.1696	4.282984	4.947816
Disconformation 2	4.5664	2.1149	0.023	−0.894	0.1769	4.219676	4.913124
Disconformation 3	5.4539	1.7545	−0.189	0.256	0.1478	5.164212	5.743588
Quality 1	5.4965	1.9854	−0.516	−0.195	0.166	5.17114	5.82186
Quality 2	5.4718	2.0376	−0.478	−0.267	0.171	5.13664	5.80696
Quality 3	5.3427	2.2079	−0.353	−0.681	0.1846	4.980884	5.704516
Satisfaction 1	5.1119	2.0593	−0.338	−0.445	0.1722	4.774388	5.449412
Satisfaction 2	5.5175	2.2638	−0.494	−0.484	0.1893	5.146472	5.888528
Satisfaction 3	5.5704	2.2766	−0.523	−0.541	0.191	5.19604	5.94476
Satisfaction 4	5.2553	2.1294	−0.499	−0.327	0.1793	4.903872	5.606728
Loyalty 1	4.1901	2.0865	−0.036	−0.837	0.1751	3.846904	4.533296
Loyalty 2	4.1259	2.1424	0.074	−0.541	0.1792	3.774668	4.477132
Loyalty 3	4.5211	2.079	−0.096	−0.472	0.1745	4.17908	4.86312
Loyalty 4	4.338	2.0999	0.097	−0.522	0.1762	3.992648	4.683352
Loyalty 5	3.5141	2.1725	0.438	−0.982	0.1823	3.156792	3.871408
Purchase intention 1	4.4825	2.2824	0.035	−0.842	0.1909	4.108336	4.856664
Purchase intention 2	5.1538	2.2961	−0.366	−0.547	0.192	4.77748	5.53012
Purchase intention 3	3.5352	4.9172	0.451	−0.795	0.1861	3.170444	3.899956
Purchase intention 4	4.9789	4.2194	−0.300	0.133	0.1724	4.640996	5.316804
Word of mouth 1	5.4225	5.3237	−0.346	−0.563	0.1936	5.043044	5.801956
Word of mouth 2	5.2168	5.7907	−0.212	−0.952	0.2012	4.822448	5.611152
Word of mouth 3	4.1915	5.1559	0.283	−0.733	0.1912	3.816748	4.566252
Word of mouth 4	4.028	2.2327	0.226	−1.032	0.1867	3.662068	4.393932

Table III.
Software survey variable descriptive results

Variable	Software sample coefficient α	Construct SEM reliability	Construct SEM variance extracted
Subjective disconfirmation	0.9241 0.8952	0.925 0.827	0.869 0.740
Quality	0.9721 0.9518	0.945 0.950	0.900 0.909
Satisfaction	0.9600 0.9549	0.945 0.917	0.900 0.736
Loyalty	0.9216 0.8929	0.959 0.885	0.892 0.813
Purchase intentions	0.8897 0.8750	0.955 0.738	0.918 0.650
Word of mouth	0.9262 0.8793	0.868 0.792	0.791 0.701

Notes: First row scores = service sample; second row scores = software sample

Table IV.
Reliability analyses for model variables

	Satisfaction	Disconfirmation	Quality	Loyalty	Intentions	WOM
Satisfaction	1.000					
Disconfirmation	0.781 0.902	1.000				
Quality	0.927 0.930	0.800 0.902	1.000			
Loyalty	0.690 0.856	0.679 0.860	0.699 0.841	1.000		
Intentions	0.781 0.761	0.695 0.737	0.770 0.710	0.854 0.840	1.000	
WOM	0.620 0.543	0.592 0.555	0.616 0.534	0.604 0.571	0.644 0.570	1.000

Notes: First row scores = service sample; second row scores = software sample

Table V.
Correlations between model variables

common concern in service research. However, we investigated the potential for multicollinearity using the regressions module of SPSS and found no index, VIF, or tolerance values outside of accepted norms.

The last issue we considered in terms of our respondents concerns the general issue of representativeness. We obtained similar respondent characteristics in response to both the software and service surveys. In both cases, the respondent demographics identified largely male, college-educated, long-time personal users of the sponsoring organization's software and services. Our discussions with managers from the sponsoring e-CRM firm led us to conclude that the obtained responses were not only generally

representative of the firm's customer base and industry at large, but also were consistent with our desire to test our research model within the context of a relationship marketing orientation.

Results of the hypothesis tests

Table VI presents the results of the hypothesis tests using structural equation modeling. Please note that all reported path coefficients are standardized. There has been a lot of discussion in recent years concerning the appropriate standards for asserting model fit using SEM. The current research relies on the combination-index recommended by Hu and Bentler (1999). These authors argue for the following (close to) cut-off indices: CFI = 0.95, RMSEA = 0.06, SRMR = 0.08.

LISREL provides a relatively rigorous test of theory within the context of cross-sectional survey research. The results in Table VI demonstrate that the proposed model in Figure 1 fits the data in both the software and service settings. In addition, all six research hypotheses are supported in both research settings. Readers will note that we have included both the structural and reduced-form R^2s in our results. The reason we have done so is based on Joreskog's (1999) argument that traditional R^2 values may not be appropriate when using SEM analyses. Rather, the reduced form R^2 can be interpreted as the relative variance of a dependent variable explained or accounted for by all explanatory variables jointly.

Readers may note that in our empirical analyses we used slightly different direct predictors for the software versus service setting (please see the Appendix). It is true that we hypothesized that the underlying model will be the same in both scenarios given the robustness of these types of models in the literature. However, we would also argue that software to implement e-service for end-users is a different marketing context than after-sale support from the

DV	Equation Eq 1 = software Eq 2 = service	R^2	Reduced form R^2	χ^2	df	RMSEA	CFI	SRMR
Quality	0.88 * disconfirmation	0.77	0.77	84.91	59	0.060	0.98	0.038
	0.94 * disconfirmation	0.89	0.89	83.38	59	0.054	0.99	0.029
Satisfaction	0.74 * quality + 0.25 * disconfirmation	0.93	0.81					
	0.66 * quality + 0.34 * disconfirmation	0.96	0.91					
Loyalty	0.85 * satisfaction	0.73	0.58					
	0.94 * satisfaction	0.89	0.81					
Word of mouth	0.71 * loyalty	0.50	0.29					
	0.44 * loyalty	0.19	0.16					
Purchase intentions	0.98 * loyalty	0.95	0.56					
	0.67 * loyalty	0.45	0.37					

Table VI.
SEM model results

company which sold the software to the organizational end-user. In the context of marketing, products and services are distinct from each other and should be investigated accordingly. Lovelock and Wright (2002) argue that basic differences between products and services include:

- customers do not obtain ownership with services;
- services involve more intangible performances;
- services involve customer involvement in the production process;
- people are part of services;
- there is greater variability with services; and
- services are harder for customers to evaluate (among others).

Therefore, we argue that using different items to measure the same construct in different contexts is sometimes necessary, even at global level of analyses. Our statistical measurement model suggests that our measures are appropriate (reliable and valid).

A second argument involves a recent discussion between Drolet and Morrison (2001a, b), and Grapentine (2001). These authors debate the relative merits of multiple-item measures in service marketing research. We generally support Grapentine's (2001) position that multiple-item measures are more appropriate when possible. We could have used single-item measures and simply conducted regression analysis. However, we believe that our SEM-based model assessment is a stronger test of our model, because it allows us the ability to address reliability and validity in our measurement model. Please also note that all of the global measures used in our study derive from previous studies, lending them a measure of face validity as well.

The results in Table VI suggest that our proposed relationship marketing model appears to capture a large amount of the variance in quality and satisfaction judgments in this industry. These results are encouraging given the extensive literature supporting these hypothesized relationships. It is interesting to note that satisfaction appears to contribute more to the explained variance of loyalty in the service settings than is so for software judgments. On the other hand, loyalty explains more variance in word-of-mouth behaviors and behavioral intentions for the software setting than the service setting. The next section discusses the research and managerial implications of the reported results.

Research and managerial implications

The purpose of this study was to develop and take a preliminary step toward validating a basic relationship marketing model for the e-CRM industry. The e-CRM industry provides the primary tools necessary to implement e-service. Our results provide support for the proposed model, which explains a significant amount of the variance associated with model variables. However, we caution readers to remember that these results were based on a census of a

single e-CRM organization's customer base. We strongly encourage marketing practitioners to replicate this study in their own competitive setting prior to making final strategic marketing decisions.

We interpret these results as providing initial support for the efficacy of generalizing existing service/relationship marketing theories and measures to e-service settings. One key implication from the tested model concerns our finding of support for a distinct causal ordering between quality → satisfaction → loyalty in this research setting. These results suggest that measures of e-service efficacy not be restricted to measures of customer satisfaction. Rather, the results support the emerging consensus in the literature that companies focusing solely on quality-based (e.g. TQM) or satisfaction programs risk producing satisfied, but not necessarily loyal, customers. These results support an orientation toward a more comprehensive, long-term relationship marketing orientation in guiding marketing research.

Marketing managers will benefit from the results of this study in at least two ways. First, our literature review identifies the problems the e-CRM industry is facing in terms of generating positive consumer attitudes, like customer satisfaction. Clearly, e-service and e-CRM marketers must first find ways of attaining better levels of customer satisfaction if this industry is to fulfill the promise of e-service. However, we would argue that marketing practitioners in this industry should now also consider moving beyond satisfaction strategies toward loyalty programs. Loyalty programs will allow the e-CRM industry to enhance customer perceptions and ultimately lead to more positive customer behaviors and better brand equity. Second, our study reports a model with measures that is easily replicable in organization's specific competitive environment. We encourage the replication of this study to assess the generalizability of our results in marketing practice.

From a research perspective, a great deal more research is clearly required in this area of inquiry and specific to this important and growing industry. For example, researchers might first address why the model explains more variance in the outcome variables (purchase and word-of-mouth intentions) for software settings than in the service setting. One explanation for this phenomenon might concern Mittal and Lassar's (1998) finding that the "type" of quality affecting satisfaction appears different from that affecting loyalty. Future research should replicate their study specific to the e-CRM industry to assess the generalizability of these results.

Second, this study relied on global measures of the relevant constructs. While the measures used in this study appear reliable and valid at the global level of analysis, industry practice and academic studies would benefit from efforts to develop multidimensional scales for the model constructs specific to alternative B2B settings. For example, Schellhase *et al.* (2000) report a multiple-item scale for e-satisfaction in B2B settings. Care must be taken to minimize the number of items in such scales, given the difficulties inherent in achieving adequate response rates with online research protocols.

Third, the research model developed herein could be expanded to include other important constructs. There are numerous model extensions that would merit consideration. For example, the ultimate aim of e-service and relationship marketing initiatives involves strengthening brand equity. Extending this basic model to include constructs such as brand equity would represent a significant contribution to the literature. Adding additional explanatory constructs such as attitude (Bobbitt and Dabholkar, 2001), e-service adoption characteristics (de Ruyter *et al.*, 2001; Parasuraman, 2000), trust (Urban *et al.*, 2000), value (Cronin *et al.*, 2000; Sawhney and Parikh, 2001; Teas and Agarwal, 2000; Ulaga and Chacour, 2001), and equity (Oliver, 1997), would also likely increase the explanatory power of the model.

Fourth, this study supports linear relationships between model variables. However, there exists a preponderance of evidence suggesting that many of these relationships might benefit from nonlinear and/or interactive conceptualizations. For example, Oliva *et al.* (1992) reported a catastrophe model conceptualizing the relationship between satisfaction and loyalty as S-shaped. Anderson (1998) presents evidence that the relationship between satisfaction and word-of-mouth behaviors is best conceptualized as U-shaped. Taylor (1997) presents evidence that the relationship between satisfaction and purchase intentions can be both curvilinear and/or interactive. Anderson and Mittal (2000) present results suggesting that the satisfaction-profit relationship may also be nonlinear. Future research should investigate the efficacy of these interesting and more complicated models.

Fifth, reconciling this study with service recovery efforts appears a worthwhile research endeavor. For example, Tax and Brown (2000) suggest that technology can play an important role in service recovery programs. Stephens (2000) argues that the importance of service recovery programs applies equally to B2B and B2C settings. However, Smith and Bolton (1998) report results that suggest viewing service failures as opportunities to impress customers may involve substantial risks. Further research could help assess the role of service recovery within e-purchasing models such as developed herein.

Finally, we previously identified Daniels' (2001) suggestion that a lack of organizational cooperation and coordination remains a major impediment to the success of CRM initiatives; 79 percent of companies that report a negative return on their CRM investments cite cultural issues within the enterprise as the cause. Research is needed to better understand the linkages between organizational culture and e-service, as well as the efficacy of internal marketing strategies.

Notes

1. e-CRM practice has grown tremendously since the mid-1990s (Bannon, 2001). Industry growth is nontrivial in that e-marketplace services spending worldwide will increase at a compound annual growth rate of 27 percent, from $5.2 billion in 2000 to $17 billion in 2005 (Young, 2001). We have every reason to believe that the movement to e-service by service marketers will continue to grow worldwide over the foreseeable future.

2. CRM can be defined as a combination of business processes and technology that seeks to understand a company's customers from a multi-faceted perspective: Who they are, what they do, and what they like (Kalakota and Robinson, 2001). Electronic customer relationship management (e-CRM) arises from the consolidation of traditional CRM with the e-business applications marketplace. e-CRM can be defined as ... "A Web-centric approach to synchronizing customer relationships across communication channels, business functions, and audiences" (Forrester Research, 2001). Thus, e-CRM provides a structure for the strategic evolution of a technology-mediated relationship-marketing business framework. Kalakota and Robinson (2001) suggest that such a framework has three primary goals: (1) using existing relationships to grow revenues; (2) using integrated information for excellent service; and (3) introducing consistent, replicable channel processes and procedures. This orientation positions e-CRM as an integration framework and a business strategy, and not a product in and of itself. Please note that we restrict the discussion herein primarily to the second goal identified by Kalakota and Robinson (2001).
3. Less than half of B2B customers said they were very satisfied with their online purchasing experience compared to 52 percent of B2C buyers.
4. Daniels (2001) suggests that a lack of organizational cooperation and coordination remains a major impediment to the success of customer relationship management (CRM) initiatives; 79 percent of companies that report a negative return on their CRM investments cite cultural issues within the enterprise as the cause.
5. The European CRM market appears to lag about 18 months behind the USA. In fact, the European customer support and service market is still largely focused on call centers, particularly in the UK.
6. For example, Kalakota and Robinson (2001) argue that e-CRM involves three phases, all of which are designed to manage the customer life-cycle and maximize customer lifetime value: (1) acquiring new customers; (2) enhancing the profitability of existing customers; and (3) retaining profitable customers for life.
7. We are not suggesting that this function is additive or linear in nature. Future research will help establish the exact nature of this function.
8. Readers not familiar with this literature are encouraged to read Oliver's (1997) text, which provides a detailed theoretical history concerning these three constructs.
9. Oliver (1999) notes that this consumer-based definition may be incomplete for purposes of B2B applications. For example, Oliver's conceptualization does not explicitly consider channel power.
10. Our experience with the sponsoring firm's customer database is not unexpected. First, databases are notoriously difficult to maintain under the best of circumstances. Second, there has been a tremendous amount of consolidation and merging of companies within this industry in recent years. The sponsoring firm represents the aggregation of no less than nine separate organizations in the last decade. When one considers the problems inherent in merging legacy databases, we were comfortable with the final response. Finally, the number of e-mail bouncebacks was relatively equal between the software and service subsamples.
11. We calculated power indices two ways. First, we used sample power by SPSS to calculate the power necessary for regression analyses. Second, following Loehlin (1998), we determined that a sample size of approximately 109 is necessary to achieve a latent-variable power rating of 0.90 for purposes of the current research.

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Appendix. Study measures

Construct	Software	Service
Subjective disconfirmation (Oliver, 1997)	XYZ software products generally perform better than I expected them to. *XYZ software products generally perform better than I predicted they would.* *XYZ software products generally perform better than competitive software.*	*XYZ customer support services generally perform better than I expected them to.* *XYZ customer support services generally perform better than I predicted they would.* XYZ customer support services generally perform better than competitor's support services.
Quality (Oliver, 1997; Taylor, 1997)	*I would say that XYZ provides superior e-CRM software.* *I believe that XYZ provides excellent e-CRM software.* XYZ provides some of the best e-CRM software that I could buy	*I would say that XYZ provides superior customer service.* I believe that XYZ provides excellent customer service. *XYZ provides some of the best customer support services in their industry today.*
Satisfaction (Oliver, 1997, p. 343)	*XYZ e-CRM software is exactly what I need.* I am satisfied with my decision to buy XYZ e-CRM software. *Our choice to buy XYZ e-CRM software was a wise one.* *I truly enjoy using XYZ e-CRM software products.*	*XYZ customer support services are exactly what I need.* I am satisfied with XYZ customer support services. Our choice to use XYZ customer support services was a wise one. *I truly enjoy using XYZ customer support services.*
Loyalty (Oliver, 1997 p. 398)	I buy XYZ e-CRM software because I like the brand more than comparable brands. I am committed to buying XYZ e-CRM software products. When I need e-CRM software products, I prefer those of XYZ. *I am generally willing to wait for new XYZ e-CRM software products.* *I largely ignore the marketing efforts of competitors offering e-CRM software products.*	*XYZ customer support services have more benefits than others in its class.* *When I have a need for customer support services, I prefer those of XYZ.* *XYZ customer support services are superior to others in their class.* I largely ignore the marketing efforts of competitors to XYZ customer support services
Intentions battery (Zeithaml *et al.*, 1996)	I consider XYZ my first choice when buying e-CRM software products. *We plan to do more business with XYZ in the foreseeable future.* *I would NOT switch to a competitor, even if I had a problem with XYZ e-CRM software products.* I intend to purchase XYZ e-CRM software products in the future.	I consider XYZ my first choice when I have to use customer support services. *I plan to continue using XYZ customer support services for the foreseeable future.* I would NOT switch to a competitor, even if I had a problem with XYZ customer support services. *I intend to continue to use XYZ customer support services.*

(continued)

Table AI.

Construct	Software	Service
Word-of-Mouth (Harrison-Walker 2001)	I mention XYZ e-CRM software products to others quite frequently. *I have told more people about XYZ e-CRM software products than I have told about most alternatives.* *I seldom miss an opportunity to tell others about XYZ e-CRM software products.* I only have good things to say about XYZ e-CRM software products.	*I mention XYZ customer support services to others quite frequently.* I have told more people about XYZ customer support services than I have told about most alternatives. *I seldom miss an opportunity to tell others about XYZ customer support services.* I only have good things to say about XYZ customer support services.

Table AI.

Note: Italicized measures are those used in final SEM analyses