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A FRAMEWORK FOR WEB-BASED E-COMMERCE CUSTOMER RELATIONSHIP MANAGEMENT

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Abstract

Conservative estimates indicate that electronic commerce will expand at a rapid pace. Despite these projections, e-commerce firms are faced with a serious challenge: how to acquire and keep customers in a marketplace where competitors are a click away. Many e-commerce firms are turning to web-based customer relationship management (CRM) as a way to establish strong customer relationships. However, this type of customer service is relatively new and not well understood. What options are e-commerce firms using to provide customer service?

This paper describes preliminary findings of ongoing research investigating the role and importance of trust in business-to-consumer (B2C) e-commerce. The research reported here focuses on the development of an empirically grounded framework for web-based CRM. Based on a content analysis of 241 B2C web sites, a framework is proposed that stratifies web-based CRM on the bases of interactivity and temporality. This framework helps us differentiate among the range of activities e-commerce firms are using to manage customer relationships online. It paves the way for studies of web-based CRM on both sides of the interface, allowing us to investigate such issues as the relative effectiveness of these options, the costs for the firms that implement them, the impacts of these options on the productivity of the firm, the effects of implementation on work flow in the firm, and the ways in which consumers make use of these options.

Keywords: Customer relationship management, e-commerce, customer service

Introduction

Electronic commerce (e-commerce) firms are finding it increasingly difficult to compete on the basis of price and product differentiation and are turning to web-based customer relationship management (CRM) as a way to grow their customer bases and increase customer loyalty. This strategy is occurring at an opportune moment as market researchers claim that many online shoppers are dissatisfied with their e-commerce experiences. What are these firms doing to improve their relationships with customers? This paper presents an empirically grounded framework for web-based CRM that can be used to make sense of the range of options currently used by e-commerce firms. A content analysis of a large sample of e-commerce web sites drawn in September 2001 indicates that there are four distinct categories of web-based CRM that can be distinguished according to social and technical criteria. This framework provides a baseline for understanding web-based CRM and suggests several research directions that will deepen our understanding of firm-customer relationships in e-commerce and improve the online retail experience for the consumer.

There is a clear and important link between CRM, customer loyalty, and repeat sales (Pearlson and Whinston; 1993). Some early adopters are clearly aware of the strategic importance of web-based CRM. For example, according to a Dell Computer executive "the customer experience is the next competitive battleground" (Gregoire, in Kirsner, 1999; 14). However, the range of web-based CRM options currently in use is not well understood. The research reported here proposes a framework for the main types of web-based CRM currently used by e-commerce firms. Beginning with a discussion of the concept of web-based CRM, the paper

describes the method used to study web-based CRM, presents preliminary findings and the framework, and concludes with a discussion of the next steps in the research and how it fits within the larger project investigating social construction of trust in e-commerce.

This work is important because it is an early attempt to make sense of a wide-ranging set of initiatives that firms are implementing as they attempt to manage online customer relationships. The framework is data-driven and provides evidence indicating that it is possible to differentiate among the range of web-based CRM implementations, organizing them into four distinct types. The framework has to be tested for stability and, if it can account for a wider and more diverse set of data, it will allow us to investigate a number of important issues surrounding web-based CRM including the relative effectiveness of these options, the costs for the firms that implement them, the impacts of these options on the productivity of the firm, the effects of implementation on work flow in the firm, and the ways in which consumers make use of these options. In the longer term, we expect to make use of this framework in an ongoing study of the creation, maintenance, and management of trust in e-commerce

What is Web-Based CRM?

In the value chain, CRM "includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered" (Porter 1985) and encompasses a set of activities "a firm engages in to win and keep customers" that are "over and above the assembly and sale of merchandise." (Kyj, 1985; 32, 33; Pearlson and Whinston, 1993). Lalonde and Zinser (1976) describe CRM as a three-phase linear process during which different and sometimes overlapping activities take place in the firm, the goals of which are to anticipate, understand, and meet customer needs. In the pre-transaction phase, activities take place within the firm preparing employees to adopt a customer-centered orientation. During the transaction phase, a main goal is to minimize the time between the placing of the order and the receipt of the product, using efficient logistics. The post-transaction phase includes the provision of easily available and clear warranty information, efficient return and repair procedures, and an efficient means of handling customer complaints and feedback.

In contrast, Rane and Ives (1999) propose a "customer service life cycle" framework that adopts a customer's point of view. In this framework a customer moves through four stages beginning with an assessment of requirements to determine whether she needs the product or service. This is followed by stages of acquisition, where the transaction takes place, ownership, where the product or service is used, and retirement, where the customer thinks about replacement. If the customer seeks out the firm for another transaction, the cycle begins anew.

These approaches are complementary because the four phases of the customer-based cycle map closely to the three phases of the firm-based approach. The firm's work during the pre-sales phase supports the customer's ability to assess her needs and requirements. The transaction and acquisition phases are two views of the same process, with the customer and firm exchanging money for products or services. Finally, the firm's post-transaction activities support the customer during the ownership and replacement phases. The advantage of combining these views of customer service is to emphasize the ongoing interactions that occur between the customer and the firm.

For the purposes of this research, CRM is a set of interactions within which and through which firms and customers develop and maintain relationships, throughout the cycle described above. From the firm's point of view, it is a set of rules-based, recurring business activities the goals of which are to maintain and grow a customer base, resolve customer problems, and increase repeat sales. From the customer's point of view, CRM involves a cyclical series of interactions with the firm during which her needs and subsequent demands on the firm change in patterned ways from the initial decision to purchase a product or service through its eventual replacement.

The e-commerce web site is the primary setting through which interactions between customers and the firm take place. It is an artifact representing the firm to its customers. CRM options are embodied in the components of the site - the text, images, links, scripts, programs, and forms. In web-based CRM the link between customer service and consumers is strong, in no small part due to the technologies of computing and the web. Bloch, Pigneur, and Segev (1996) conjecture that "through intelligence built into systems and the extended availability of intelligent support systems, electronic commerce systems can enhance customer service." Sterne (1996) argues that network technologies enable the creation of "individual customer feedback loops" and allow personalized customer service, transforming e-commerce into a competition for customers, but for "one customer at a time."

CRM should be a critical component of a successful e-commerce business framework (Freemantle, 1998; Stone, 1997), but available data do not support this assumption (Pitkow and Kehoe, 1999, Mattis, 1999; 113). E-commerce firms are beginning

to explore web-based CRM but many consumers are not satisfied with their e-commerce experiences. Consulting and marketing firms generate much of the evidence and, although they have a vested interest in gaining clients, their research indicates that there is a paucity of good CRM in e-commerce. Offline businesses assume that it is a large part of a customer's experience with a firm and are willing to make large investments in managing customer relationships. What are e-commerce firms doing?

Studying Web-Based Customer Relationship Management

The primary concern here is web-based CRM in B2C e-commerce. While business-to-business e-commerce is important, the analysis of CRM in this sector is beyond the scope of this paper. Within the B2C sector, some firms are integrating of web and non-web based forms of CRM; again, while this is an intriguing development, it is not the primary focus of this research, which seeks to provide a empirically grounded baseline framework of "pure" web-based CRM. These are topics to be addressed in subsequent work.

What types of web-based CRM are e-commerce firms currently providing? To answer this question, a content analytic scheme was developed to analyze a sample of web-based CRM options used by e-commerce retail firms. Between September 25 and September 27, 2001, a set of 10 keywords and phrases was used to search for e-commerce sites using six of the major search engines Search terms were selected to represent ten different market sectors. For a list of the terms, see Table 1: Search engines, keywords, and sample. Terms in quotes were used in combined or exact phrase searches, depending on the particular search engine's options. Each term or phrase was entered on a search engine and the first 10 unique URLs were collected, excluding webboard and listserv postings and .edu, .gov and other non-commercial sites, producing a list of 100 URLs. URLs for sites not involved in e-commerce (were not selling products and/or services), were business-to-business e-commerce sites, or were dead links were removed from the list. This procedure was repeated for each search engine producing a list of 600 URLs. After removing redundant links, a list of 241 e-commerce sites was compiled.

Table 1. Search Engines, Keywords, and Sample Sites

Search terms:	Search engines:	Sample sites
1. "computer sales" 2. "software" 3. "cell phone" 4. "designer clothing" 5. "stock trading" 6. "wine" 7. "books" 8. "music cds" 9. "loans" 10. "online groceries"	1. Google www.google.com 2. AltaVista www.altavista.com 3. HotBot www.hotbot.com 4. Lycos www.lycos.com 5. Go www.goto.com 6. FAST www.alltheweb.com	Computer sales - 32 Software - 24 Cell phone - 30 Designer clothing - 32 Stock trading - 23 Wine -15 Books -17 Music CDs - 21 Loans - 28 Online groceries -19 n = 241

A Framework for Web-Based CRM

A random sample of 20 sites from this list was drawn and became the initial set for analysis and initial development of the coding scheme. The researchers examined the sites separately and met to discuss the emerging coding rules and categories. Then, with an initial scheme in place, each web site on this list was visited at least twice between October 2 and November 5, 2001. Every web-based option was recorded and the page containing the option was downloaded and printed. A total of 896 instances of web-based CRM were located, described, and recorded in the scheme. Multiple instances of CRM options on a given site were coded as separate instances, meaning that each site was employing an average of 3.5 different CRM options. The final content analytic scheme was developed through a process of iterative coding of the options found on these sites. Tested for intercoder reliability, the scheme had a level of agreement of 87%.

The content analysis produced a framework organizing the data into four categories based on two social and technical criteria that emerged during data analysis: degrees of interactivity and the communication mode (synchronous/asynchronous). In this case,

interactivity is a continuum ranging from human-to-computer communication at one extreme (low social presence) to real-time human-to-human mediated communication (high social presence). "Social presence" describes one's perception of the "salience" of others in a communicative exchange (Carlson and Davis, 1998; 337). This perception is mediated by the channels through which these exchanges occur (Short, William & Christie, 1976). Media with high social presence, such as face-to-face communication allow "warmth, personality, sensibility, and sociability to be communicated" (Alavi, Yoo, and Vogel, 1997; 1313) while media with low social presence, such as email, dampen the communication of these characteristics (Rice, 1993).

From the point of view of the customer, web-based CRM options can be seen as solitary (low interactivity and social presence) or interactive (high interactivity and social presence). Solitary customer service involves actions taken by the customer without the direct intervention of the firm and is low in social presence (Short, William and Christie, 1976). These are "discrete transactions," involving "very little communication and narrow content" (Hoffman, Novak, and Peralta, 1999b; 132). If registration is not required, customers interact with the firm in relative anonymity.

Almost two-thirds (61%) of the CRM options in the sample were solitary. The firm typically engages in continuous maintenance of these options, but there is no direct interaction between the firm and the customer. This type of CRM is based on a "self-help" framework and accommodates people who want to have rapid access to the information they need at a time of their choosing (Seybold; 1998, 245). They can conduct research about products and services, configure and price different product options, and complete transactions without the intervention of the firm. With this option, people attempt to answer their own questions and troubleshoot and resolve their problems. From the firm's point of view, this is a desirable type of customer, because she helps to hold down the costs of service by doing much of it herself. The challenge for the firm is to implement solitary customer service options in ways that increase social presence during the customer's interaction with the firm. (see Table 2: Examples of web-based CRM)

Table 2. Examples of Web-Based CRM

Type of service	Examples
Solitary/Asynchronous	Mailing lists, newsgroups, listservs, newsletters autoresponders
Solitary/Synchronous	Viewing order status and tracking, viewing shopping carts, Help pages/FAQs, knowledge bases, currency converters, store locators, online tutorials, web broadcasts, online calculators
Interactive/Asynchronous	Email, electronic forms, feedback/survey forms, bulletin /message boards, forums
Interactive/Synchronous	Live talk, chat

Interactive CRM involves some form of direct, computer-mediated interaction between a representative of the firm and the customer or among customers. It accounted for almost two-fifths (39%) of the instances in the sample. Interactive options have more social presence and have more in common with Hoffman, Novak, and Peralta's (1999b; 133) "relational transactions." These options have histories and futures of which the firm and the customer are aware, although each may have differing perceptions of the experiences. Interactive options carry social expectations that "entail unspecified obligations" and require participants in the exchange to trust each other to carry out their obligations (Hoffman, Novak, and Peralta, 1999b; 133). This type of CRM requires the active participation of members of the firm as they interact with customers. The challenge for firms is to manage these interactions in ways that increase the social presence, and reputation of the firm.

The technical criterion is the elapsed time between message and response. Web-based CRM options can be arrayed along a continuum from the passing of days and weeks between message and response to almost instantaneous responses. Asynchronous options are at the slow end of the continuum, meaning that considerable time has elapsed between the customer's action and the firm's response; synchronous options are at the rapid end with little or no time has elapsed. Instances in the sample were almost evenly split between asynchronous (46%) and synchronous (54%) options.

The categories of web-based CRM briefly described below are combinations of these social-technical criteria. The instances in the sample can be arrayed and compared in a 2X2 table, as four types of web-based CRM distinguished by degrees of interactivity and temporality; these are:

- Solitary and asynchronous
- Solitary and synchronous
- Interactive and asynchronous
- Interactive and synchronous.

In decreasing order, solitary synchronous CRM accounted for 477 instances (53%), interactive asynchronous CRM contained 338 instances (38%), solitary asynchronous CRM contained 71 instances (8%), and the interactive synchronous CRM contained 10 (1%) (see Table 3: A framework for web-based CRM)

Table 3. A Framework for Web-Based CRM

	Solitary	Interactive	Totals
Asynchronous	Computer sales (6) Software (12) Cell phone (6) Designer clothing (11) Stock trading (9) Wine (6) Books (4) Music CDs (8) Loans (5) Online groceries (4) Total=71(8%)	Computer sales (41) Software (48) Cell phone (40) Designer clothing (43) Stock trading (30) Wine (22) Books (24) Music CDs (34) Loans (35) Online groceries (21) Total=338(38%)	409(46%)
Synchronous	Computer sales (58) Software (66) Cell phone (69) Designer clothing (51) Stock trading (35) Wine (29) Books (48) Music CDs (46) Loans (41) Online groceries (34) Total=477(53%)	Computer sales (1) Software (0) Cell phone (3) Designer clothing (0) Stock trading (1) Wine (1) Books (0) Music CDs (0) Loans (4) Online groceries (0) Total=10(1%)	487(54%)
Totals	548(61%)	348(39%)	896(100%)

Conclusions

Our analysis is continuing with four tasks yet to be completed. Our next steps are to:

- Sort these categories according to the types of firms. Are certain types of web-based CRM more likely to be used in certain market sectors? Are there patterns of co-occurrence in the instances where firms use multiple CRM options? Which options are correlated with each other?

- Provide more and richer details about the instances in each category.

- Explore the possibility of employing genre analysis to anchor the framework more firmly in the literature

- Test the stability and generalizability of this framework with a larger and more varied sample of e-commerce sites.

Assuming that the framework is stable, research will proceed in two directions - in front of and behind the interface. The former involves studying customers as they use web-based CRM to interact with firms. The latter involves studying e-commerce firms as they use these options to manage customer relationships. We are particularly interested in assessing the costs of these options and their impacts on firms' profitability and understanding how they effect work flows in the firms.

Our preliminary findings are that web-based CRM can be arrayed along axes of interactivity and temporality. At one extreme, customers can engage in solitary interactions with software and data files provided by the firm. These activities are less interactive and low in social presence. At the other extreme, customers can engage in real time chat with representatives of the firms and, in some cases, other customers. These activities are high in interactivity and social presence. These same options can also be arrayed along a continuum of time required to complete the interaction. Some options are asynchronous, with varying amounts of time elapsing between the action initiated by the customer and the response from the firm. Other options are synchronous and involve little or no time between the action and the response. Our framework of web-based CRM can be decomposed into four categories:

- Solitary and asynchronous
- Solitary and synchronous
- Interactive and asynchronous
- Interactive and synchronous

With this framework, we are attempting to clarify and organize the range of activities that constitute web-based CRM. By proposing a empirically-grounded framework, we are taking early steps in the investigation of a phenomenon that is crucial to the success of electronic business. As our work progresses, we expect that our framework will become an important component in our understanding of the ways in which e-commerce firms create, manage, and maintain relationships with their customers.

Web-based CRM involves ongoing interactions between the firm and the customer and plays a vital role in building trust into the relationship and establishing the firm's reputation in the marketplace (Hoffman, Novak, and Peralta, 1999a). It is an important component of the firm's intangible asset base and is essential in building and maintaining customer loyalty and retention. Customers experience the values of the firm in every interaction they have throughout the customer service life cycle. What can e-commerce firms learn from this study? Good CRM strengthens the customer's trust in the firm and enhances its reputation; a failure to meet customer expectations can lead to defections and the degradation of the public perception of the firm. As a consequence, trust in an e-commerce firm is fragile because it is socially constructed and maintained in large part through web-based CRM.

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