

Customer Relationship Management for the E-Grocery Sector*

Jong-Youn Rha**, Neal H. Hooker***, Richard Widdows****

Asst. Prof., Dept. of Consumer Studies, Seoul National University**

Asst. Prof., Dept. of Agricultural, Developmental and Environmental Economics, The Ohio State University***

Professor and Head, Dept. of Consumer Sciences and Retailing, Purdue University****

Abstract : In this paper, the e-grocery sector of the U.S. is used as an illustrative example of how to assess consumers' demands for customer relationship management and to investigate whether these demands coincide with effective Customer Relationship Management (CRM) strategies suggested by academic researchers and provided by practitioners. Surveys evaluating the perceived importance of CRM items were administered accordingly. The findings show that, overall, consumers' did not differ considerably to the experts. The results of descriptive analyses showed that academicians had a more closely in-lined view with consumers than did practitioners. Although not statistically significant, practitioners perceived loyalty programs to be more important than did consumers or academicians. This might suggest that loyalty programs are primarily serving as a way of data mining, and are thus failing to provide benefits to consumers. Overall, items related to technology deployment were perceived to be more important by practitioners than consumers or academicians.

Key Words : Customer Relationship Management, E-Grocery, consumer perspective

1. Introduction

In the context of electronic business, with the increased competition among retailers and the reduced switching costs from one seller to another, it can be argued that the power in the marketplace is shifting in favor of consumers (Rha and Widdows, 2002). The shift in market power means that understanding consumer demands and expectations will be of greater importance than ever before. Blackwell and Stephan (2001) stated

that ultimately, customers will choose the winners in the new market place by “voting with their dollars and their loyalty for the business that best satisfies their needs and wants” (p.9).

In this respect, it is not surprising that customer relationship management (CRM) became a buzzword in the era of electronic commerce. However, recent empirical findings suggest that CRM has not lived up to its original promise and failed to produce results from both consumers' perspective (increased satisfaction) and

Corresponding Author: Jong-Youn Rha, Assistant Professor, Dept. of Consumer Studies, Seoul National University Tel: 82-2-880-9236 Email: jrha@snu.ac.kr

* This research was partly supported by a grant from Research Institute of Human Ecology, Seoul National University.

businesses' perspective (increased customer loyalty which leads to long-term profit) (Conlin, 2001; Seben, 2001).

Blackwell and Stephan (2001) argued that it is important to recognize that the Internet and websites are not e-commerce but they are enablers of e-commerce, and as such, the Internet should be understood as a tool for building strong relationships with a valuable customer base. They argue that "technology determines what can be offered, but customers determine what is accepted (p.17)". In this regard, a key question that needs to be answered in terms of developing effective customer relationship management strategies in the era of electronic business is: "what exactly do consumers value?"

In this paper, the e-grocery sector in the U.S. is used as an illustrative example of how to assess consumers' demands for customer relationship management and to investigate whether these demands coincide with important dimensions of CRM strategies suggested by researchers and provided by practitioners.

The purpose of this paper is three fold. First, the paper attempts to provide an overview definition of customer relationship management (CRM) by performing a review of the current literature, and to identify the most appropriate dimensions of CRM in the Internet era. Second, the paper attempts to investigate the importance of various dimensions of CRM from the consumer perspective. Third, the paper attempts to investigate whether effective CRM demanded by consumers coincide with effective CRM provided by practitioners and suggested by researchers.

II. The Concept and Dimensions of Customer Relationship Management

In this section, the literature on customer relationship management in the electronic commerce context is reviewed in an attempt to identify dimensions of CRM that are more applicable to empirical studies. The review of the literature was limited to front-end, customer facing application since the focus of the study was to investigate CRM from a consumer perspective. Six potential underlying dimensions of CRM in the context of electronic commerce were revealed.

1. Product/General Support

The product/general support dimension includes CRM efforts that are proactive in nature, and address concerns that consumers may have before making the purchasing decisions. Rha, Heilig, Ernst, Widdows, Haugtvedt and Hooker (2001) argued for the importance of product and firm quality signaling when addressing the concern of consumer uncertainty in the context of electronic commerce, since consumers have no means to examine the goods physically. Breithenbach and van Doren (1998) also suggested the provision of in-depth product and company information as an important technique to "enhance the utility of the Internet as a vehicle for marketing communication" (p.562). In an empirical study, Raijas (2002) found that higher price, uncertainty about product quality, lack of available information about products, and narrower product assortment were among top problems consumers face in the adoption of e-grocery

shopping, indicating that solutions of these problems would improve customers experience with electronic shopping. Prabhaker (2000) also addressed the need for e-business to be proactive in his discussion of dealing with consumers' privacy concerns.

Based on this research, the 'product/general support' dimension of CRM in this study is defined to include efforts that are related to the provision of in-depth information about products and the company, wide range of product assortment and a proactive privacy policy that jointly address consumers' concerns about uncertainty.

2. Shopping Support

The shopping support dimension includes CRM efforts that make the process of shopping more convenient for consumers. In a study of e-grocery shoppers in Finland, Raijas (2002) found that convenient shopping experience is one of the most important reasons for the use of an e-store. Szymanski and Hise (2000) found that shopping convenience including ease of browsing, site design, and easy search paths, was significantly and positively related to satisfaction with e-tailing. Electronic recommendation agents have often been cited as an important feature of the shopping support dimension (Ansari and Rajeev, 2000; Rowley and Slack, 2001).

3. Transaction Support

The transaction dimension includes CRM efforts that make the order-fulfillment process more convenient for consumers. Real-time transactions

have been identified as a unique feature of e-business that is attractive to customers (Breitenbach and van Doren, 1998). In an empirical study of e-grocery adoption, Verhoef and Langerak (2001) concluded that e-grocery services should design simple ordering and fulfillment procedures that are user friendly in order to accelerate the adoption process. The importance of transaction support was also confirmed in the empirical study of Szymanski and Hise (2000) in which financial security of online transaction was found to be positively and significantly related to satisfaction with e-tailing.

4. Value Creation

The value creation dimension refers to CRM efforts that are geared towards providing additional value to consumers' shopping experiences. Breitenbach and van Doren (1998) argued that web sites must provide value added features or services to users if sites are to be adopted and ultimately be used. Several researchers have addressed the issue of consumer value creation on and off-line. Personalizing the shopping experience is another feature that is often mentioned as a source of additional value for online consumers (Prabhaker, 2000; Rowley and Slack, 2001; Wind and Rangaswamy, 2001). In an empirical study of consumers who belonged to membership clubs, Liebermann (1999) found that belonging to such organizations can have a concrete potential for enhancing members' patronage. Smaros and Holmstrom (2000) suggested that the e-grocery business should take advantage of being connected to consumers through networks and provide a

vendor managed inventory service as a way of creating value in the Internet era. C2C networking, such as forum or online chat rooms, and links to other useful sites, such as Consumer Reports, also have been suggested as means of creating customer value in e-business (Breitenbach and van Doren, 1998).

Problem Solution: Problem solution dimension includes CRM efforts to assist consumers through making the redress process easier and more convenient. Breitenbach and van Doren (1998) suggested that open communication such as comments, suggestions and complaints via email are advantageous techniques available only via the Internet media that should be utilized for enhancing customer experience. Strauss and Hill (2001) argued that incoming and outgoing emails are critical components of a firm's CRM function in electronic marketing. However, Widdows and Widdows (1999) suggested that while it is important to recognize the unique features of online customer support, "we are not all digital beings yet" (p.226), and the need for traditional call centers remains in the Internet era. Bradshaw and Brash (2001) also suggested that combining channels of customer support can result in consumer convenience and subsequent loyalty.

5. Delivery

The delivery dimension refers to CRM efforts that enable consumers to "shop from the comfort of home" (Breitenbach and van Doren, 1998, p.563) and receive products. Delivery of digital products may happen through the Internet, in which case the focus of CRM efforts should be on the speed of

delivery. The delivery dimension of CRM is found to be important for physical products as well. Rajjas (2002) discovered that delivery was the most important determinant of consumers' decision to use an e-grocery rather than a conventional store. Punakivi and Saranen (2001) identified home delivery transportation service to be one of the critical resources to the success of e-business, especially for the e-grocery business. Verhoef and Langerak (2001) also found that consumers perceive the reduction in the physical efforts of transporting purchased grocery items to be an important advantage of e-grocery shopping.

III. E-Grocery Industry

E-Grocery is a fledging sector of e-business, at an early stage of the adoption curve, with potential for future growth. One recent study forecast that food retailing conducted over the Internet is likely to generate more than \$23 billion in sales in Europe and around \$32 billion in the U.S. by 2005 (Reuters, 2001). Recognizing this aspect of the e-grocery industry, Heilig, Ernst and Hooker (2001) argued that the evaluation of non-adopter consumer needs and the development of tools that cater to such needs are essential for the success of the e-grocery industry. Terbeek (1996) also suggested that the future success of the e-grocery industry lies not with improvements on the supply chain side but rather the management of consumers' value chain.

The focus of this study is in line with a body of literature that attempts to investigate factors related to a successful e-grocery business through a better

understanding of consumer demands (Morganosky and Cude, 2000, 2001, 2002; Smaros and Holmstrom, 2000; Kamaranen, et al. 2001; Priluck, 2001; Punakivi and Saranen, 2001; Raijas, 2002). More specifically, this study focuses on customer relationship management aspects of the e-grocery industry as a key feature of customer value chain management.

IV. Methodology

To explore consumers' demands for CRM in the e-grocery industry a web-based consumer survey was conducted. Since the primary focus was to understand future consumer demands, the sample was not restricted to current users of e-grocery. The sample used in this study consisted of consumers who have relatively easy access to and some experience with the use of the Internet, who are potential users of e-grocery services.

Two separate surveys of expert groups, one consisting of academic researchers focused on customer relationship management and consumer behavior (academician group), and the other consisting of managers in the e-grocery industry (practitioner group), were conducted to understand the current consensus among experts about what should be the important features of CRM in the Internet era. The potential respondents in the academician group were selected based on their expertise and research interests, and to represent a diverse range of academic institutions across the United States. The potential respondents in the practitioner group were selected based on their expertise within the company and their position

(only practitioners in managerial positions were asked to participate). Only one response was collected from each e-grocer. The selection of e-grocers was based on criteria used by Heilig (2002) and the sample included nearly all significant U.S. e-grocers currently operating in the sector. This effort is in line with the implementation of forecasting or foresight approaches such as Delphi techniques, which are found to be useful in the study of policies to obtain a consensus among experts (Rowe and Wright, 2000; Munier and Ronde, 2001). Foresight techniques are aimed at apprehending the longer-term future of science, technology, business and/or society and its economic and social benefits (Martin, 1995). The survey of academicians was conducted online and the survey of practitioners was conducted using both Internet and mail surveys.

1. Instrument Development

Based on the work of Rha, Hooker and Widdows (2003) items from each of the six dimensions of CRM in the Internet era were selected. The items were originally developed as part of a coding scheme for a quantitative content analysis of e-grocery web sites (see, e.g., Heilig, 2002 and <http://aede.osu.edu/programs/e-agbiz>). For the purpose of this study, the items were modified so as to be appropriate for a self-administered consumer (and expert) survey. The final instrument consisted of 40 CRM items (see Tables 2, 3 and 4).

The perceived importance of each item was measured using a 5 point Likert scale (1=very unimportant to 5=very important). Information on

demographic characteristics such as age, gender, education level, household income, and shopping related characteristics such as previous online purchases and previous online grocery purchases were collected from consumer respondents. Information on their assessment of the importance of these CRM items was collected from academics and practitioners.

2. Data Collection

The potential respondents for the consumer survey consisted of experienced web users with access to the Internet, who may or may not have used or adopted online grocery shopping. An

invitation email containing the URL of the survey was sent to each potential respondent. A chance of winning a \$50 gift certificate in a random drawing was offered as an incentive to participate. The data collection took place between February 5th and February 10th, 2002. Among the 800 invitation emails, 24 emails (0.03%) were returned due to incorrect or invalid email addresses. Authentication was used to address the potential problem of multiple responses. Within the period of data collection, 163 unique responses were collected for a response rate of 21%.

The demographic characteristics of the sample, U.S. online population and general U.S. population are compared in (Table 1). The sample under-

<Table 1> Consumer Characteristics

Variable	Category	Sample	U.S. ^a Online Population	U.S. ^a Population
Age	18-29	16.6 ^b	28	22
	30-39	22.1	23	22
	40-49	32.5	23	20
	50-64	25.1	18	18
	65 and over	1.9	7	16
Gender	Male	39.9	51	48
	Female	56.4	49	52
Household Income	Under \$50,000	41.1	42	54
	\$50,000 and over	52.8	45	32
Variable	Category	Frequency (%)		
Previous Online Purchase	Yes	133 (81.6)		
	No	30 (18.4)		
Previous Online Grocery Purchase	Yes	14 (8.6)		
	No	147 (90.2)		
Primary Grocery Shopper	Yes	122 (74.8)		
	No	38 (23.3)		

^a Source: Harris Interactive <<http://www.harrisinteractive.com>>

^b In sample, the youngest respondent was 22 years old.

Note1. N=163

represented consumers under 29 and over 65, and over-represented consumers between 40 and 64. However, the over representation of middle-aged consumers is consistent with empirical studies of online grocery shoppers (e.g., Morganosky and Cude (2000, in which 57% of respondents were between 35 and 55). When compared to the U.S. online population, the sample over-represented female consumers and consumers with relatively higher income. 74% of Morganosky and Cude's sample consisted of consumers with income of \$50,000 or higher.

The shopping related characteristics of the respondents showed that consumers are experienced Internet users with almost 82% of them reporting having purchased products/services online. Almost 75% of the respondents were the primary shopper of grocery items in the household. However, only 8.6% of the respondents reported having experience with online grocery purchases (Table 1).

The survey of academicians was also conducted online. The sample consisted of 30 professors in the field of Consumer Sciences, selected based on their research interests in consumer behavior and decision making and/or electronic commerce, and researchers affiliated to university-based agricultural research institutions. A pre-notification email that explained the nature of the study and the selection criteria for potential respondents was sent out four days prior to the invitation email. This procedure was used to make sure that the potential respondents understood why they were specifically selected to participate in the survey and to give an option for them to decline the invitation to participate if they felt that their area of expertise

did not match the purpose of the study. No such refusals were forthcoming. The data were collected from February 5th to February 18th. Twenty experts responded within the data collection period for a response rate of 67%.

A mail and a web-based instrument was used to survey the practitioners. An invitation mail with a paper version of the survey was sent to each of the 30 selected practitioners in the e-grocery business with a stamped return envelope. However, they were also provided with the URL of the survey and were given an option to either return the completed questionnaire via regular mail or to participate in the survey online. Three practitioners chose to participate online and another three practitioners returned the completed survey via mail, with an overall response rate of 20%.

3. Analysis

The empirical analysis is composed of two parts. First, to investigate perceived importance, descriptive statistics for each group were obtained and CRM items rank ordered. To investigate the difference in perceived importance of CRM items across consumer, academicians and practitioner groups, nonparametric Kruskal-Wallis tests were used. Nonparametric or distribution-free tests are useful alternatives to parametric tests when outliers may be present or when the sample sizes are too small to permit the assessment of distributional assumptions (Ramsey and Schafer, 1997). In this study, nonparametric tests were applied given the unbalanced and small sample sizes for expert groups. As an extended application of the Mann-Whitney test, Kruskal-Wallis tests compare the

center of location for two or more independent samples and test the null hypothesis that the samples come from the same population. The observation from independent samples are combined and ranked, with the average rank assigned in the case of ties. If populations are identical in location, the ranks should be randomly mixed among the independent samples (SPSS Inc., 1999).

The Kruskal-Wallis test is a nonparametric version of the one-way analysis of variance for independent samples, calculated based on the sums of the ranks of the combined groups. The test is used to identify if at least one of the mean ranks being compared significantly differs from any one of the others. To determine which of the mean ranks differ, a series of Mann-Whitney tests were conducted on the CRM items that showed significant differences in their mean ranks in the Kruskal-Wallis tests. The Mann-Whitney test is a nonparametric version of a two sample t-test.

Second, to investigate the perceived importance of various CRM dimensions, single CRM items were categorized into the six dimensions discussed above, and summed to construct composite scales. To assess the homogeneity of these CRM dimension scales, Cronbach's alpha was obtained for each of the 6 CRM dimensions scales (Society for Consumer Psychology, 2001, p.56). The mean scores for these scales were weighted to take into consideration the difference in the numbers of items. A series of paired t-tests were performed to investigate differences in the perceived importance across various CRM dimensions, and rank orders were assessed.

V. Results

1. Perceived Importance of CRM Items

1) Consumers

The rank orders, means and standard deviations of consumers' perceived importance of CRM items are presented in (Table 2). Consumer respondents perceived 'easy access to price information' to be the most important CRM item with a mean of 4.50, followed by 'ease of navigation' (4.47), and 'ease of price comparison between brands' (4.45). Among the 40 items, seventeen had mean scores higher than 4.00 indicating that they were perceived to be of high importance by consumers.

The item that consumers perceived to be the least important was 'availability of online community' with a mean score of 1.99, followed by 'recipe suggestion' (2.65), and 'individualization or customization of the web site' (2.68). Overall, 7 items had mean scores less than 3.00 indicating that they were perceived to be rather unimportant by consumers and all of those 7 items were related to the 'value creation' dimension.

2) Academicians

<Table 3> provides the results of the academicians survey. The item that was perceived to be the most important by academicians was 'easy access to price information' (4.85), followed by 'ease of navigation' (4.75), and 'availability of search tools' (4.45). Academic experts perceived 'availability of online community' (1.90) to be the least important item of all, followed by 'recipe

<Table 2> Consumers' Perceived Importance of CRM items

Rank	Item	Mean	S.D.
1	Easy access to price information	4.50	1.044
2	Ease of navigation of the web site	4.47	1.003
3	Ease of price comparison between brands	4.45	0.992
4	Ease of access to information on taxes and delivery charges before check out	4.40	1.032
5	Use of security tool for transaction	4.34	1.105
6	Availability of search tool	4.33	0.985
7	Clear statement of refund policy and process	4.29	0.897
8	Choice of delivery or pickup time	4.29	0.934
9	Real time inventory (in stock availability of products)	4.24	1.029
10	Wide range of products available	4.12	0.973
11	Order confirmation via email	4.11	1.025
12	Availability of toll-free telephone number	4.09	1.078
13	Wide range of brands available	4.07	0.905
14	Availability of order status check online	4.05	0.970
15	Clear statement of privacy policy	4.04	1.127
16	Availability of information on warnings, recalls or other problems	4.03	1.021
17	Availability of pick-up option locally	4.02	1.024
18	Choice of delivery location (work or home)	3.95	1.069
19	Availability of local store (affiliated / branch) for problem solution	3.94	1.014
20	Availability of information about producers	3.40	1.045
21	Availability of pictures of products	3.91	1.054
22	Availability of nutritional information	3.89	1.068
22	Availability of coupons or special offers	3.89	1.102
24	Availability of technical support (e.g. trouble shooting)	3.86	1.084
25	24/7 customer support	3.65	1.115
26	Availability of call back option	3.58	1.028
27	Interactive customer support during the usual office hours	3.57	1.152
28	Availability of rush service	3.53	1.101
29	Availability of special kind of products (e.g. organic)	3.39	1.091
30	Availability of FAQ	3.34	0.972
31	Corporate history and financial information	3.29	1.122
32	Availability of loyalty program	3.19	1.014
33	Availability of shopping recommendation	3.08	1.031
34	Links to useful sites	2.94	1.094
35	Availability of information from other customers	2.89	1.053
36	Automated system that transfers ingredients into shopping cart	2.75	1.060
36	Meal solutions for special conditions	2.75	1.133
38	Individualization or customization of the web site	2.68	1.093
39	Recipe suggestion	2.65	1.013
40	Bulletin board, chat room - availability of online community	1.99	0.915

Note: N=163

<Table 3> Academicians' Perceived Importance of CRM items

Rank	Item	Mean	S.D.
1	Easy access to price information	4.85	0.366
2	Ease of navigation of the web site	4.75	0.444
3	Availability of search tool	4.45	1.119
3	Ease of price comparison between brands	4.45	0.759
5	Choice of delivery or pickup time	4.35	0.933
6	Ease of access to information on taxes and delivery charges before check out	4.25	0.967
7	Availability of toll-free telephone number	4.21	0.713
8	Real time inventory (in stock availability of products)	4.20	0.951
9	Clear statement of refund policy and process	4.15	0.988
10	Wide range of products available	4.10	1.119
10	Availability of technical support (e.g. trouble shooting)	4.10	1.119
12	Availability of nutritional information	4.05	0.945
12	Choice of delivery location (work or home)	4.05	1.191
14	24/7 customer support	4.00	1.155
14	Use of security tool for transaction	4.00	1.298
14	Order confirmation via email	4.00	0.973
17	Availability of order status check online	3.95	0.887
17	Availability of information on warnings, recalls or other problems	3.95	1.276
19	Availability of local store (affiliated / branch) for problem solution	3.90	1.165
19	Wide range of brands available	3.90	1.071
21	Availability of pick-up option locally	3.75	1.070
22	Interactive customer support during the usual office hours	3.75	1.020
23	Availability of special kind of products (e.g. organic)	3.70	1.081
24	Availability of rush service	3.65	1.182
25	Clear statement of privacy policy	3.60	1.429
26	Availability of pictures of products	3.58	1.261
27	Availability of coupons or special offers	3.50	1.051
28	Availability of call back option	3.44	0.856
29	Corporate history and financial information	3.10	1.071
30	Availability of information about producers	3.05	0.999
30	Availability of FAQ	3.05	0.759
32	Meal solutions for special conditions	2.95	1.146
33	Availability of shopping recommendation	2.79	0.976
34	Individualization or customization of the website	2.75	1.293
35	Links to useful sites	2.70	1.302
36	Availability of information from other customers	2.65	0.933
37	Availability of loyalty program	2.50	0.889
38	Automated system that transfers ingredients into shopping cart	2.30	0.865
38	Recipe suggestion	2.30	0.923
40	Bulletin board, chat room - availability of online community	1.90	0.852

Note: N=20

suggestion' (2.30), and 'automated system that transfers ingredients into shopping cart' (2.30).

3) Practitioners

<Table 4> summarizes the results of the survey of practitioners. 'Ease of navigation' was perceived to be the most important CRM item by practitioner. All respondents regarded it as 'very important' (5.00). The top three items perceived to be important by practitioners also included 'easy access to price information' (4.83), and 'ease of access to information on taxes and delivery charges before check out' (4.67). The item that was perceived to be the least important by practitioners was 'availability of online communities' (2.00), followed by 'availability of information from other customers' (2.50), and 'links to useful sites' (2.67).

4) Comparison across Consumer and Expert Groups

The results of the Kruskal-Wallis tests showed that, overall, the perceived importance of each CRM item did not differ significantly across consumers, academicians and practitioners. Among the 40 items, four had mean scores that differed significantly across the three samples at a significance level of .05, and two items at a significance level of .10. To investigate which of the groups differed in their mean rank order, a series of Mann-Whitney tests was conducted on those six items and the rank orders of consumers versus academicians, consumer versus practitioners and academicians versus practitioners were compared. The results are presented in (Table 5).

The result of the nonparametric analyses showed that the mean ranks of consumers' perceived

importance of 'availability of loyalty program' (asympt. $p < 0.05$) and 'automated system that transfers ingredients into shopping cart' (asympt. $p < 0.10$) were significantly higher than those of academicians. The results indicate that consumers perceived those two items to be more important than did academicians.

Comparison between consumers and practitioners revealed that these two groups differed more than did the consumers and academicians. The perceived importance of five CRM items significantly differed between consumers and practitioners. Consumers' mean rank of 'ease of price comparison' was significantly higher than that of practitioners (asympt. $p < 0.05$), indicating higher perceived importance. On the other hand, the consumers perceived importance of 'availability of pictures of products' (asympt. $p < 0.10$), 'availability of special kinds of product' (asympt. $p < 0.10$), 'individualization or customization of the web site' (asympt. $p < 0.05$) and 'automated system that transfers ingredients into shopping cart' (asympt. $p < 0.05$) were significantly lower than did practitioners.

Comparison between academicians and practitioners showed similar results to the comparison between consumers and practitioners. These results indicated that academicians perceived 'ease of price comparisons' to be more important than did practitioners (asympt. $p < 0.05$), while the mean ranks for 'availability of pictures of products' (asympt. $p < 0.10$), 'availability of loyalty program' (asympt. $p < 0.05$), 'recipe suggestion' (asympt. $p < 0.05$) and 'automated system that transfers ingredients into shopping cart' (asympt. $p < 0.05$) were ranked significantly lower by

<Table 4> Practitioners' Perceived Importance of CRM items

Rank	Item	Mean	S.D.
1	Ease of navigation of the web site	5.00	0.000
2	Easy access to price information	4.83	0.408
3	Ease of access to information on taxes and delivery charges before check out	4.67	0.516
4	Availability of pictures of products	4.67	0.516
5	Clear statement of privacy policy	4.50	0.837
5	Availability of search tool	4.50	0.548
5	Order confirmation via email	4.50	0.548
8	Use of security tool for transaction	4.33	0.516
8	Availability of toll-free telephone number	4.33	0.816
10	Availability of nutritional information	4.17	0.753
10	Availability of special kind of products (e.g. organic)	4.17	0.408
10	Clear statement of refund policy and process	4.17	0.753
10	Choice of delivery or pickup time	4.17	1.169
14	Individualization or customization of the web site	4.00	0.894
14	Real time inventory (in stock availability of products)	4.00	0.632
16	Availability of order status check online	3.83	1.169
16	Wide range of products available	3.83	0.753
16	Wide range of brands available	3.83	0.753
16	Availability of loyalty program	3.83	0.983
16	Availability of coupons or special offers	3.83	0.753
21	Availability of technical support (e.g. trouble shooting)	3.67	0.516
21	Availability of call back option	3.67	1.033
21	Automated system that transfers ingredients into shopping cart	3.67	0.516
21	Ease of price comparison between brands	3.67	1.033
21	Availability of local store (affiliated / branch) for problem solution	3.67	1.211
26	Availability of FAQ	3.50	0.837
26	Choice of delivery location (work or home)	3.50	0.548
26	Availability of rush service	3.50	0.548
26	Interactive customer support during the usual office hours	3.50	0.837
30	Availability of pick-up option locally	3.33	1.366
30	Meal solutions for special conditions	3.33	0.516
32	24/7 customer support	3.17	0.753
32	Recipe suggestion	3.17	0.408
32	Availability of shopping recommendation	3.17	0.408
35	Availability of information on warnings, recalls or other problems	3.00	1.414
35	Availability of information about producers	3.00	0.632
37	Corporate history and financial information	2.83	1.169
38	Links to useful sites	2.67	1.033
39	Availability of information from other customers	2.50	0.548
40	Bulletin board, chat room - availability of online community	2.00	0.632

Note: N=6

<Table 5> Summary of Significant Kruskal-Wallis and Mann-Whitney Nonparametric Tests

CRM Items	Group	N	Mean Rank	Chi-Square	df	Asymp. Sig.
Ease of price comparisons ^{CP, ap}	C	159	95.32	6.595	2	0.037
	A	20	88.32			
	P	6	44.17			
Availability of pictures of Products ^{cp, ap}	C	160	93.15	5.075	2	0.079
	A	19	79.21			
	P	6	132.6			
Availability of special kinds of Products ^{cp}	C	161	90.89	5.059	2	0.080
	A	20	107.6			
	P	6	131.2			
Availability of Loyalty Program ^{CA, AP}	C	157	95.05	11.403	2	0.003
	A	20	59.10			
	P	6	121.8			
Individualization or customization of the web site ^{CP, AP}	C	161	91.91	7.013	2	0.030
	A	20	94.13			
	P	6	149.7			
Automated System that transfers Ingredients into shopping cart ^{ca, CP, AP}	C	159	93.78	9.222	2	0.010
	A	20	71.72			
	P	6	123.2			

Note 1: C represents consumers, A academicians, and P practitioners.

Note 2: Superscript ^{CA} represents difference in mean ranks between consumer and academicians, superscript ^{CP} represents difference in mean ranks between consumer and practitioners and superscript ^{AP} represents difference in mean ranks between academicians and practitioners, all at the significant level $p < .05$.

Note 3: Superscript ^{ca} represents difference in mean ranks between consumer and academicians, superscript ^{cp} represents difference in mean ranks between consumer and practitioners and superscript ^{ap} represents difference in mean ranks between academicians and practitioners, all at the significant level $p < .10$.

Note 4: Higher mean ranks indicates higher perceived importance since 1=very unimportant and 5=very important.

academicians than by practitioners.

In general, practitioners were closer to a within-group consensus about the importance of CRM items as compared to consumers and academicians, judging by the smaller sizes of standard deviations.

2. Perceived Importance of CRM Dimensions

The CRM items were re-categorized into six

dimensions, namely product/general support, shopping support, transaction support, value creation, problem solution and delivery.¹⁾

In <Table 6>, weighted means of the perceived importance for the six CRM dimensions reported by consumers, academicians and practitioners are

1) all six dimensions of CRM had Cronbach's alphas higher than 0.70, indicating acceptable internal consistencies for each of the constructs.

presented²⁾. Both consumers and academicians perceived 'transaction support' to be the most important CRM dimension with weighted mean scores of perceived importance of 4.12 and 4.05, respectively, while practitioners perceived the 'shopping support' dimension to be the most

important with a weighted mean score of 4.22. The 'value creation' dimension was considered to be the least important by all three groups.

Kruskal-Wallis tests were conducted to investigate whether the weighted mean scores of perceived importance for CRM dimensions differed across consumer and expert groups. The results showed no significant difference for any of the six dimensions. To investigate if the perceived importance of each dimension differed statistically, a series of comparisons using paired t-tests was conducted. The results of these paired comparisons for consumers' are presented in (Table 7).

<Table 6> Weighted Means of Perceived Importance of CRM Dimensions

CRM Dimension	Consumers	Academicians	Practitioners
Product/General Support	3.9719	3.8772	3.9306
Shopping Support	3.9620	4.0000	4.2222
Transaction Support	4.1248	4.0500	4.0667
Value Creation	2.8613	2.6167	3.2222
Problem Solution	3.7780	3.7411	3.7143
Delivery	3.9686	3.9500	3.6250

Note: N=163 for consumers, N=20 for academicians, N=6 for practitioners

2) Weights were used to take into account the number of items in each dimension. A weighted mean is the mean for each dimension multiplied by 1/(number of items in the dimension) and is a standardized value ranging between the possible lowest value of 1 and the possible highest value of 5.

<Table 7> Results of Paired Comparisons of Consumers' Weighted Mean of Perceived Importance of CRM Dimensions

Paired CRM Dimensions		Mean Difference	S.D.	S.E.	t	Sig.
Product/General	Shopping	-0.0038	0.47	0.04	-0.10	ns
	Transaction	-0.1649	0.49	0.04	-4.10	0.000
	Value Creation	1.1383	0.74	0.06	18.45	0.000
	Problem Solution	0.1852	0.58	0.05	3.92	0.000
	Delivery	-0.0066	0.60	0.05	-0.14	ns
Shopping	Transaction	-0.1697	0.50	0.04	-4.18	0.000
	Value Creation	1.1134	0.74	0.06	18.32	0.000
	Problem Solution	0.1788	0.64	0.05	3.46	0.001
	Delivery	-0.0123	0.62	0.05	-0.25	ns
Transaction	Value Creation	1.2791	0.84	0.07	18.28	0.000
	Problem Solution	0.3421	0.51	0.04	8.29	0.000
	Delivery	0.1642	0.62	0.05	3.29	0.001
Value Creation	Problem Solution	-0.9375	0.79	0.07	-14.3	0.000
	Delivery	-1.1025	0.83	0.07	-16.2	0.000
Problem Solution	Delivery	-0.1733	0.56	0.05	-3.85	0.000

<Table 8> Weighted Means of Perceived Importance of CRM Dimension Scales

CRM Dimension	Consumers	Academicians	Practitioners
Product/General Support	3.9719	3.8772	3.9306
Shopping Support	3.9620	4.0000	4.2222
Transaction Support	4.1248	4.0500	4.0667
Value Creation	2.8613	2.6167	3.2222
Problem Solution	3.7780	3.7411	3.7143
Delivery	3.9686	3.9500	3.6250

Note: N=163 for consumers, N=20 for academicians, N=6 for practitioners

Consumers perceived 'transaction support' to be more important than any other CRM dimension as indicated by a significantly higher weighted mean score, and perceived 'value creation' to be less important than all other CRM dimensions, as indicated by a significantly lower weighted mean score. The rank order of consumers' perceived importance of CRM dimensions can be summarized as:

Transaction support > Product/general support = Delivery = Shopping support > Problem solution support > Value creation.

The comparison of perceived importance of each CRM dimension of consumers, academicians and experts are shown in (Table 8).

3. Discussion and Conclusion

This study focuses on effective customer relationship management in the Internet era. The importance of CRM items were compared across consumers, academicians and practitioners. Proposed dimensions of CRM were also evaluated in this empirical study of the U.S. e-grocery sector.

1) Perceived Importance of CRM Items and Dimensions

The findings showed that, overall, consumers' perceived importance of CRM items did not differ considerably from those of experts. The results of descriptive analyses showed that academicians had a view more closely in line with consumers than did practitioners.

Although not statistically significant, practitioners perceived loyalty programs to be more important than did consumers or academicians. This might suggest that loyalty programs, while useful as a source for data mining, are failing to provide benefits to consumers. Overall, items related to technology deployment were perceived to be more important by practitioners than consumers or academicians. This may be consistent with the criticism of Webster (1998) that customers and their needs are left out of the planning process of business strategy because business practices "get carried away with the potential of the latest communications, networking, and interactive software and hardware capabilities." (p.55).

In the investigation of perceived importance of the CRM dimensions, the finding that 'transaction support' was perceived to be the most important of all by consumers indicates that security of transaction may still be an over-riding issue for many potential customers. The finding that the 'value creation' dimension is perceived to be the least important by consumers and experts groups alike indicates that despite the attention and hype about all the wonderful things that interactivity and technology allow us to do, they are not yet fulfilling promises. This requires further investigation.

2) Contribution of the Study

The key contribution of this study is that it empirically adds to the understanding of customer relationship management. Key dimensions of effective CRM in the Internet era are evaluated. From a practical perspective, the study adds to the understanding of CRM by providing evidence of consumers' expectations of effective items and dimensions. Also by demonstrating that consumers expectations, although not considerably different, are not identical to beliefs of experts about what consumers want, the study confirms the need to address consumers' demand when planning and implementing CRM

3) Implications for consumers

Consumers need to recognize that the benefit of customer relationship management should be mutual to both businesses and consumers. For example, in a qualitative study, Gwinner, Gremler and Bitner (1998) argued that consumers experience social, psychological, economic and customization benefits. The Internet has provided consumers the opportunities to actively provide input into business practices and planning and consumers should take advantage of this opportunity to co-create value that is beneficial to themselves. In particular, consumers should recognize the value of consumer-to-consumer (C2C) networking as a potential source of valuable information and social support that one can contribute to and benefit from.

4) Implications for managers

In an empirical study based on expectation-

confirmation theory Bhattacharjee (2001) found a significant and positive relationship between confirmation, as measured by the degree to which online CRM efforts met consumers' expectation, and satisfaction, and also found an indirect relationship with continuance intention through satisfaction. Effective CRM strategies are intended to both attract and retain valuable consumers. The findings of this study can provide guidance to practitioners when designing effective CRM. Businesses also need to recognize that customer value is a source of competitive advantage (Woodruff, 1997).

Practitioners should recognize that consumers perceive the deployment of technology, such as individualization and automation, to be less important than practitioners. Practitioners should be aware of the fact that provision of technology is only beneficial if consumers are prepared to use it.

The finding that the 'transaction support' dimension was perceived to be the most important of all dimensions also requires special attention. This result could be a possible indication that consumers are still concerned about security of online transactions or order-fulfillment. Practitioners should emphasize their efforts in this dimension.

5) Implications for future study

The empirical study of e-grocers in this study was used as an illustrative example to demonstrate the need to address consumers' expectations in designing effective CRM. The findings may be specific to the e-grocery sector as consumers may expect different benefit from other online services or procurement systems. Similar research is

required in other industry sectors to determine if the results reported here are sensitive to the nature of the products or services offered.

6) Limitations of the study

Several of the consumers surveyed here were non-adopters of e-grocery shopping, meaning that they have yet to try online food shopping. The findings are meaningful in the sense that the consumer sample used included experienced web users and potential adopters. However, for the purpose of assessing the current status of CRM being employed in the industry, a complementary survey consisting solely of adopters would be useful.

Finally, since the focus of this paper was to assess CRM from a consumer perspective, the study only included front-end, consumer facing CRM. However, CRM also has a back-end, company facing component business-to-business (B2B) that is also important in effective planning and implementation. Future research should address CRM from such this “partner relationship management” perspective.

■ References

- Ansari, A., & Rajeev, C. (2000). Internet recommendation systems: a Bayesian approach. Paper presented at 2nd INFORMS, Marketing Science and the Internet: Understanding Consumer Behavior on the Internet Conference, April 28-30, 2000.
- Bhattacharjee, A. (2001). An empirical analysis of the electronic commerce service continuance. *Decision Support Systems*, 32, 201-204.
- Blackwell, R. D., & Stephan, K. (2001). *Customers Rule!*. New York: Crown Business.
- Bradshaw, D., & Brash, C. (2001). Managing customer relationships in the e-business world: how to personalize computer relationships for increased profitability. *International Journal of Retail and Distribution Management*, 29(12), 520-529.
- Breitenbach, C. S., & van Doren, D. C. (1998). Value-added marketing in the digital domain: enhancing the utility of the Internet. *Journal of Consumer Marketing*, 15(6), 558-575.
- Conlin, R. (2001). CRM is failing customers. *CRMDaily.com*. September 11 2001. Available online [http://www.crmdaily.com/perl/printer/13454].
- Gwinner, K. P., Gremler, D. D., & Bitner, M. J. (1998). Relational benefits in services industries: the customer's perspective. *Journal of Academy of Marketing Science*, 26(2), 101-114.
- Heilig, J., Ernst, S., & Hooker, H. N. (2001). Assessing the e-commerce strategies for grocers. Working paper. Department of Agricultural, Environmental and Development Economics, The Ohio State University.
- Heilig, Julia K. (2002). An Exploration of Online Food Shopping: E-Grocers' Strategies and Consumer Attitudes. Unpublished Masters Thesis, Department of Agricultural, Environmental, and Development Economics,

- The Ohio State University. 161 pp.
- Kamranen, V., Smaros, J., Jaakola, T., & Holmstrom, J. (2001). Cost-effectiveness in the e-grocery business. *International Journal of Retail and Distribution Management*, 29(1), 41-48.
- Liebermann, Y. (1999). Membership clubs as a tool for enhancing buyer's patronage. *Journal of Business Research*, 45, 291-297.
- Martin, B. R. (1995). Foresight in science and technology. *Technology Analysis and Strategic Management*, 7, 139-168.
- Morganosky, M. A., & Cude, B. J. (2000). Consumer response to online grocery shopping. *International Journal of Retail and Distribution Management*, 28(1), 17-26.
- Morganosky, M. A., & B. J. Cude. (2001). Consumer Responses to Online Food Retailing. *Journal of Food Distribution Research*, 32(1), 5-17.
- Morganosky, M. A., & B. J. Cude. (2002). Consumer demand for online food retailing: is it really a supply side issue?. *International Journal of Retail and Distribution Management*, 30(10), 451-458.
- Munier, F., & Ronde, P. (2001). The role of knowledge codification in the emergence of consensus under uncertainty: empirical analysis and policy implications. *Research Policy*, 30, 1537-1551.
- Prabhaker, P. R. (2000). Who owns the online consumer?. *Journal of Consumer Marketing*, 17(2), 158-171.
- Priluck, R. (2001). The impact of priceline.com on the grocery industry. *International Journal of Retail and Distribution Management*, 29(3), 127-134.
- Punakivi, M., & Saranen, F. (2001). Identifying the success factors in e-grocery home delivery. *International Journal of Retail and Distribution Management*, 29(4), 156-163.
- Raijas, A. (2002). The consumer benefits and problems in the electronic grocery store. *Journal of Retailing and Consumer Services*, 9, 107-113.
- Ramsey, F. L., & Schafer, D. W. (1999). *Statistical Sleuth*. Belmont, CA: Duxbury Press.
- Reuters. (2001). Online Groceries Set for Growth Explosion. Report. October 11th.
- Rha, J.-Y., Heilig, J., Ernst, S., Widdows, R., Haugtvedt, C., & Hooker, H. N. (2001). Product and firm quality signaling in e-business: interstices for smaller business. *Journal of Business and Entrepreneurship*, 13, 57-70.
- Rha, J.-Y., Hooker, N. H., & Widdows, R. (2003). Typology of Customer Relationship Management from a consumer perspective. Working paper.
- Rha, J.-Y., & Widdows, R. (2002). The Internet and the Consumer: Countervailing Power Revisited. *Prometheus*, 20(2), 107-118.
- Rowe, G., & Wright, G. (1999). The Delphi technique as a forecasting tool: issues and analysis. *International Journal of Forecasting*, 15, 353-375.
- Rowley, J., & Slack, F. (2001). Leveraging customer knowledge - profiling and personalization in e-business. *International Journal of Retail and Distribution Management*, 29(9), 409-415.

- Seben, L. (2001). Getting CRM right. CRMDaily.com. June 15, 2001. Available online [http://www.crmdaily.com/perl/printer/11286].
- Smaros, J., & Holmstrom, J. (2000). Viewpoints: reaching the consumer through e-grocery VMI. *International Journal of Retail and Distribution Management*, 28(2), 55-61.
- SPSS Inc. (1999). Chapter 13, Nonparametric tests, 231-242. *SPSS Base 9.0 Applications Guide*. Chicago IL: SPSS Inc.
- Strauss, J., & Hill, D. (2001). Consumer complaints by e-mail: an exploratory investigation of corporate responses and customer reaction. *Journal of Interactive Marketing*, 15(1), 63-73.
- Szymanski, D. M., & Hise, R. T. (2000). E-satisfaction: an initial examination. *Journal of Retailing*, 76(3), 309-322.
- Terbeek, G. A. (1996). 1996 and beyond: the value of value. *Progressive Grosser*, December 1996, 91-95.
- Verhoef, P. C., & Langerak, F. (2001). Possible determinants of consumers' adoption of electronic grocery shopping in the Netherlands. *Journal of Retailing and Consumer Services*, 8, 275-285.
- Widdows, R., & Widdows, K. (1999). Sisyphus at his exercise: The Internet and consumer business relations in the US: 215-228. *Information and Organization: A Tribute to the Work of Don Lamberton*. Macdonald, S. and Nightingale, J. (Eds.). Amsterdam: Elsevier Science B.V.
- Wind, J., & Ragaswamy, A. (2001). Customerization: the next revolution in mass customization. *Journal of Interactive Marketing*, 15(1), 13-31.
- Webster, F. E. (1998). Interactivity and marketing paradigm shift. *Journal of Interactive Marketing*, 12(1), 54-55.
- Woodruff, R. B. (1997). Customer Value: the next source for competitive advantage. *Journal of Academy of Marketing Science*, 25(2), 139-153.

Received April 19, 2005

Accepted May 24, 2005