

Validation of a CRM scale for the B2C market: exploratory factor analysis

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Abstract

The main objective of this study was to develop and validate in the United States a reliable and valid scale for Customer Relationship Management (CRM) in the business-to-consumer (B2C). An American sample (N=210) was collected online using MTurk in order to ensure the presence of a broad variety of American customers. The result was a one-factor model with high reliability and good fit. This research is a starting point to provide a comprehensive valid measure of customer relationship management based on customers' perspectives. As practical implications, the one-factor model can be used as a diagnostic tool to identify aspects in CRM where specific improvements are needed. Also, it can be used as an instrument of evaluation to help managers better understand how to meet client's needs in order to deliver high-value products and services developing a long-term and profitable relationship.

Keywords: customer relationship management (CRM); business-to-consumer market (B2C); scale validation; exploratory factor analysis.

1 Introduction

The main authors of Customer Relationship Management (CRM) (Campbell, 2003; Zablah et al., 2004; Ryals, 2005; Payne, 2006) agree on the relevance of managing the relationship between organizations and its customers. Thus the adaptation of the organizational capacity to detect opportunities in the market and the constant effort of companies on establishing long term relationships with its business partners, especially with its customers, has been established as a priority to enterprises (Demo and Ponte, 2008).

Considering both the strategic relevance of CRM for organizations nowadays, and the lack of measuring scales customized for the B2C market as well as the importance of validating a scale in different countries for improved generalizability, the main objective of this study is to validate the Customer Relationship Management Scale (CRMS) in the US, based on the previous CRM scales that Rozzett and Demo (2010a, 2010b) developed and validated in Brazil. Some CRM scales are found in the literature (e.g., Wilson and Vlosky, 1997; Sin et al., 2005; Zulkifli and Tahir, 2012) but none focus on the customer's relationship marketing perception in the B2C market in general, in other words, they don't focus on a specific firm or industry.

According to Peppers and Rogers (2001), there are relevant differences between CRM in the B2C world and CRM in the B2B (business-to-business) world. First, in the B2B world, there are relationships within relationships. So, the "identify customers" task concerns itself a great deal with identifying the actual people within the business that have responsibilities for the decision; second, because in B2B space there are large customers and big organizations, the statistical tools that are useful in B2C CRM might be not relevant in B2B CRM.

Also, Peppers and Rogers (2001) discuss that a B2B company becomes a customer gradu-

ally, requiring different ways to develop an account and to deal to its infrequent purchases. Moreover, in the B2B world, the channel distribution process can be extremely complex and so the products and services sold what demands to base the sales process on educating and training the customers, much more in B2B than in B2C CRM. Finally, the authors highlight that in the B2B space, a high-value offering is to fashion customer relationship initiatives in such a way that will help a business manage itself.

Therefore, a measure customized to the B2C market is a gap in the literature since B2C and B2B markets have important differences as we have seen. Furthermore, if the CRMS shows theoretical consistency and also good psychometric indexes when validated in a different country (US), it will be a psychometrically and operationally valid measure to be used in relational studies both from Marketing and Consumer Behavior fields. Additionally, it could be used as a diagnostic tool to identify CRM aspects where specific improvements are needed, as well as an instrument of evaluation to help managers better understand how to meet client's needs and deliver high-value products and services.

This article begins with a literature review of CRM concerning the theoretical background and the presentation of the development and validation of the Customer Relationship Scale in Brazil then the methods are detailed. Finally, the results are presented and discussed pointing the research limitations and its practical implications as well as highlighting directions for future research

2 Literature review

2.1 Theoretical Background

It is important to consider the competitiveness perspective on organizational studies. Along

with globalization and new technologies, competitiveness is imperative and characterized by the non-stop organizational search for competitive advantage.

Kumar et al. (2011) investigated if market orientation is, indeed, a source of sustainable competitive advantage and discovered a positive effect of market orientation when crossed with business performance on either long or short terms. The study conducted by Mishra and Mishra (2009) showed that as more organizations realize the significance of becoming customer-centric in today's competitive era, as the more they adopted Customer Relationship Management (CRM) as a core business strategy, driving them to the conclusion that CRM can help organizations manage their interactions with customers more effectively in order to maintain competitiveness.

For Grönroos (1994), Sheth and Parvatiyar (2002), CRM or relationship marketing represents a paradigm shift on marketing concepts, a change on marketing orientation from just attracting customers to having customer's retention and loyalty. As stated by Payne (2006), CRM provides opportunities to use information, know clients better, offer value by customized sales and develop long-term relationships. The company should have know-how on processes, operations and integration in order to allow that the core of marketing become the philosophy that guides the business.

McKenna (1999) presents a strategic relationship marketing approach placing the customer in first and changing the marketing role of manipulating customers to making a real commitment with them. The author emphasizes the retention of profitable customers, multiple markets and an approach regarding multifunctional marketing, in which the responsibility for marketing strategies development and relationship with the customer is not limited to the marketing department only. Accordingly, Campbell (2003, p.375) found that

“Elements common to all CRM definitions include leveraging technology to engage individual customers in a meaningful dialogue so that firms can customize their products and services to attract, develop, and retain customers”.

“Long-term customers buy more, take less of a company's time, are less sensitive to price and bring in new customers. Best of all, they have no acquisition or start-up cost” (Reichheld, 1996, p.2). In this sense, competitive advantage can be acquired by knowing the expectations, preferences, and behavior of customers. Thus, according to the author, retaining customers, developing a relationship and continuously satisfying them can be considered the basis for a successful trajectory for most organizations.

Although CRM has become an extremely relevant proposal, the comprehension of what it means is still limited. Many companies incur on a conceptual mistake by equaling customer relationship marketing to support systems for CRM implementation. Regarding this controversy, Bygstad (2003) conducted a longitudinal 6-year case study of a company implementing CRM both as a marketing principle and as an information system. He concluded that the high failure rate of CRM projects illustrates the gap between intentions and outcomes, what means a technological drift since systems have been used in more ways than intended. Bygstad (2003) emphasizes that CRM projects should be treated as a complex that needs tight control and application of change management techniques.

Payne (2006) stresses that the importance of defining CRM correctly is not a semantic preciousness. Such definition significantly impacts the way CRM is understood, implemented and practiced in organizations. The author highlights that CRM is a strategic holistic approach to manage the relationship with customers in order to create value to the stockholder. Moreover, CRM

needs to be infused with strategic vision to create value to the stockholder through the development of relationships with strategic customers, bringing together the potential of information technology (IT) to the relationship marketing strategies that will result in the establishment of profitable long-term relationships.

In the same vein, Zablah et al. (2004) agree that while numerous studies have yielded important insights, the extant CRM literature appears to be inconsistent and is highly fragmented due, primarily, to the lack of a common conceptualization. Thus, the authors proposed a clear and accurate delineation of CRM as an “ongoing process that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit-maximizing portfolio of customer relationships” (p. 475).

The five case studies of Canadian financial services firms that have implemented customer relationship programs analyzed by Campbell (2003) led her to the conclusion that creating a customer knowledge competence requires a new way of doing business. The results showed that the efforts these five firms had made to change the way customer information was shared and acted upon within the firm are related to the conceptual framework about the internal processes involved in creating customer knowledge competence composed by four components namely customer information process; marketing – IT (information technology) interface; senior management involvement; and employee evaluation and reward systems.

The studies conducted by Ryals (2005) in the financial services industry revealed that the relationship between customer management and lifetime value of customers is dynamic in both B2B and B2C markets. The author concluded that the impact on customer management for individual key accounts or on segment strategies was pretty

considerable. Moreover, larger customers created more value for both firms and costs rose with customer size, but not as quickly as did revenues (Ryals, 2005).

Huang and Xiong (2010) stated that CRM has reached a strategic maturity and it influences the entire cycle of life of a product and not only the before or after-sales stages. Still on the enlargement of CRM influence, Ernst et al. (2011) sustain that its potential has been only investigated on already existent products cases, but it should be considered on the development of new products as well, once their studies showed that CRM has a positive correlation with performance and success of new products.

Also considering that corporative culture has not been sufficiently studied on relationship marketing, Iglesias et al. (2011) presented a model of corporative culture from a CRM-oriented organization. The results showed two primary factors were needed for its effectiveness: “client orientation” and “high level of care for employees”. Moreover, other six-shared values (confidence, involvement, teamwork, innovation, flexibility and results orientation) would also facilitate the orientation development towards relationship marketing.

As for literature reviews concerning CRM, Ngai’s (2005) first article was considered a milestone regarding the academic literature about customer relationship marketing. It analyzed 205 articles in different databases published in over 85 different academic reviews from 1992 to 2002. Ngai’s (2005) study concluded for the force of CRM research, questioning about the low percentage of theoretical reviews related to CRM privacy, and predicting that the field would continue to present significant growth during the next years.

Ngai et al. (2009) wrote the first academic review on the application of data mining techniques for CRM. The results showed that mod-

els of classification and association are the most commonly used in data mining regarding CRM. Besides, customer retention is the most researched area of all and the one-to-one marketing and loyalty programs are the most investigated themes.

Wahlberg et al. (2009) questioned the evolution of CRM research through time and identifying trends and research topics from 4 investigation areas: strategic CRM, analytical CRM, operational CRM and collaborative CRM. The results showed that the number of articles about CRM as a specific topic was relatively low until the end of the nineties, exactly as pointed by Ngai (2005), which confirms the aspect of novelty CRM holds on marketing research. Also, most researches have been done on strategic CRM, which was the most popular by the end of the studied period of time. Additionally, they have found predominance of research on big companies at the expense of medium and small businesses whose characteristic must be taken into account.

Concerning CRM measures, we found some studies with scale validation that were mostly based in 5 measurement scales. First, Wilson and Vlosky (1997) developed a CRM scale for the business-to-business (B2B) market. Sin et al. (2005) validated a scale to measure the CRM dimensions practiced by the companies in the financial service sector of Hong Kong. Soch and Sandhu (2008) developed a scale for CRM applied to manufacturing industries in India. More recently, Öztaysi et al. (2011) proposed an instrument for the measurement of CRM processes in Turkey.

Finally, Rozzett and Demo (2010a, 2010b) develop and validate in Brazil a scale specifically for the business-to-consumer (B2C) market to assess customer's relationship perception, named Customer Relationship Scale (CRS). Three customized scales were adapted and validated based on Rozzett and Demo's scale: a CRS for Disney and amusement parks (Vasconcelos and Demo,

2012); a CRS for Nintendo Wii and video-games (Batelli and Demo, 2012); and a CRS for Brazilian beverages, Skol beer and Guarana soda (Lopes and Demo, 2012).

3 Development and Validation of the Customer Relationship Management Scale in Brazil

The studies of the development and validation of the CRMS in Brazil (Rozzett and Demo, 2010a, 2010b) were the basis for the validation in the US because it is the only one found on the literature addressing to the B2C market in general. Item generation of the CRMS validated in Brazil was based on a broad literature review as well as on interviews with various customers from different organizations. Regarding the interviews, the analysis of categorical thematic content recommended by Bardin (2011) was used for the identification of categories and its indicators. The categories that emerged from content analysis were consistent with the most recently literature and Rozzett and Demo's (2010a, 2010b) initial pool was composed of 40 items.

As to the theoretical analysis of the items, Rozzett and Demo (2010a, 2010b) followed the steps proposed by Kerlinger and Lee (2008). At first, the items were submitted to semantic analysis and then twelve experts in the CRM field (both professors and practitioners) were exposed to the definition of the construct and to a related explanation. They were asked to assess the fit of the statements to the CRM concept. After the judges' analysis, the CRMS counted 26 items with a 5-point Likert scale, varying from "I totally disagree" to "I totally agree".

Thereafter, CRMS was validated through EFA (Rozzett and Demo, 2010a, 2010b). The results presented a one-factor instrument with 20

items (Rozzett and Demo, 2010a), namely the complete version, consistent with the literature review. It explained about 40% of the construct's total variance, had a Cronbach's alpha of .93 and 70% of the items ranked as excellent, very good and good, according to Comrey and Lee (1992). Nonetheless, Rozzett and Demo (2010b) validated a reduced scale with only 8 items, namely the abridged version, and presented even better indexes: 64% of total variance explained, a Cronbach's alpha of .92 and better items in terms of validity (excellent and very good items only).

For the present works' proposal, twenty items were developed based on the Rozzet and Demo's scales, and also on the literature review, for the application version of the CRMS (see Chart 1).

Chart 1: Application Version of the CRMS

- 1) This company deserves my trust.
- 2) I recommend this company to friends and family.
- 3) This company treats me as an important customer.
- 4) My shopping experiences with this company are better than I expected.
- 5) I identify myself with this company.
- 6) This company treats its customers with respect.
- 7) This company offers personalized customer service.
- 8) The products/services sold by this company are a good value (the benefits exceed the cost).
- 9) This company solves problems efficiently.
- 10) This company tries to get to know my preferences, questions and suggestions.
- 11) This company rewards my loyalty.
- 12) This company has communication channels for complaints and suggestions (e.g., toll free, online customer service, etc.).
- 13) This company provides information about its policies, projects, products/services and new releases.
- 14) I'm willing to buy other products/services from this company.
- 15) This company encourages interaction among its customers (e.g., events, Facebook, etc).
- 16) This company is socially and environmentally friendly.
- 17) This company has good facilities (either physical, in case of stores, or virtual, in case of websites).
- 18) There are a few competitors to this company that have the same importance to me.
- 19) This company offers convenience to its customers (e.g., online services, home delivery, 24-7 customer service).
- 20) The products/services sold by this company are high quality.

4 Methods

This section will detail the study conducted for the development and validation of the Customer Relationship Management Scale in the United States (US). For such purpose, an American sample (N=210) was collected online using MTurk in order to ensure the presence of a broad variety of American customers. This diversification indicates sampling variability and representativeness. Scale reliability was assessed by Cronbach's alpha.

Data was collected from 210 employees of various organizations. Among the employees, 65% were male, 63% were White or Caucasian, 55% were under the age of 26, 49.5% had a Bachelor degree, 43.5% had been customers of the companies chosen between 1 and 5 years, and 67% purchase from the companies chosen on a weekly (33%) or monthly (34%) base.

The data was examined (searched for incorrect values, missing data and outliers) and the assumptions for multivariate analysis were checked, following the procedures recommended by Tabachnick and Fidell (2007) and Hair et al. (2009). The final sample counted then with 200 subjects. Hair et al. (2009) say that for an adequate sample size, it is necessary to have between 5 and 10 individuals for each item of the instrument. Nonetheless, the authors state that any factor analysis with less than 200 individuals can hardly be considered suitable. The sample size with 200 subjects attended, therefore, both criteria.

In order to perform the EFA, the correlation matrix, the matrix determinant and the results of the Kaiser-Meyer-Olkin (KMO) sampling adequacy test were analyzed regarding factorability. For factor extraction, Principal Components Analysis (PCA) was used. Once the matrix was considered factorable, the eigenvalues, percentage of explained variance of each factor, scree plot graphic and parallel analysis were then examined in order to determine the quantity of factors to be extracted.

After defining the quantity of factors, a Principal Axis Factoring (PAF) analysis was run using Promax rotation - since correlation among factors was expected, which is common in behavioral phenomena. Cronbach's alpha was used to check the reliability of each factor.

5 Results

The analyses' results confirmed the matrix high factorability to perform the exploratory factor analysis. KMO was 0.931, classified by Kaiser (1974) as marvelous. The determinant of the matrix was extremely close to zero indicating that the number of factors is lower than the number of items. Through Principal Components Analysis, it was possible to decide how many factors would be

extracted. The analysis of the criteria adopted (eigenvalues higher than 1.0, explained variance percentage of each factor above 3%, scree plot graphic visual analysis and parallel analysis) brought us to a one-factor solution, with a possibility of a two factors solution, according to the eigenvalues and explained variance percentage criteria.

By running the Principal Axes Factoring (PAF) analysis for two factors, a high-significant correlation between them ($r = 0.744$) was found, indicating the presence of a second order factor. Hence, the one-factor solution was chosen. After 4 iterations, only 14 items remained from the 20 original items. Thus, the CRMS resulted in a one-factor instrument with 14 items. All the items were measured with a five-point Likert-type scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

The items are compatible with the theoretical review done, explaining 50% of the construct's total variance, which can be considered worthy, especially for one-factor structures. The validity or quality of the items that composed each factor was also analyzed. Considering that a valid item is the one that well represents the factor, that is, an item with a good factor loading, the minimum acceptable load was .50 (Hair et al, 2009).

Comrey and Lee (1992) classified items with loadings higher or equal .71 as excellent; higher or equal .63 as very good; higher or equal .55 as good; higher or equal .45 as reasonable; and higher or equal .32 as poor. Thus, as to the items' quality, 100% of them were classified as excellent, very good and good.

Concerning the reliability, internal consistency or precision of the factors, Nunnally and Bernstein (1994) suggest values above .70 for modest reliability, .80 for a good one and above .90 for high reliability. Therefore, the CRMS showed high reliability, with alpha coefficient equals to .92. Table 1 summarizes the main information of the scale.

Table 1: Description of the CRMS items

Item	Description	Loading
16	This company treats its customers with respect.	.85
14	My shopping experiences with this company are better than I expected.	.79
13	This company treats me as an important customer.	.79
12	I recommend this company to friends and family.	.77
11	This company deserves my trust.	.69
19	This company solves problems efficiently	.69
120	The products/services sold by this company are high quality.	.66
15	I identify myself with this company.	.66
114	I'm willing to buy other products/services from this company.	.64
17	This company offers personalized customer service.	.61
110	This company tries to get to know my preferences, questions and suggestions.	.61
117	This company has good facilities (either physical, in case of stores, or virtual, in case of websites).	.61
18	The products/services sold by this company are a good value (the benefits exceed the cost)	.60
111	This company rewards my loyalty.	.55

Note: total variance explained = 50%; total of items = 14 items.

6 Discussion

This section discusses the theoretical consistency of the scale validated in the study, academic and managerial implications of the results obtained and also points out limitations and directions for further research.

Theoretical Consistency of the Customer Relationship Management Scale (CRMS)

All items of the CRMS presented theoretical support and are relevant to the customer relationship assessment as shown on Table 2.

Thereafter, we might affirm that CRMS's 14 items indeed have theoretical support, greatly corresponding to the literature reviewed throughout this paper. The items of the Customer Relationship Management Scale developed and validated in

Table 2: Items of the Customer Relationship Management Scale and their theoretical background

Item	Theoretical Background
16. This company treats its customers with respect.	Demo and Ponte (2008)
14. My shopping experiences with this company are better than I expected.	Demo et al. (2011)
13. This company treats me as an important customer.	Demo and Ponte (2008)
12. I recommend this company to friends and family.	Ravald and Grönroos (1996), Payne (2006)
11. This company deserves my trust.	Brei and Rossi (2005), Sirdeshmukh et al. (2002), Morgan and Hunt (1994)
19. This company solves problems efficiently.	Demo et al. (2011)
120. The products/services sold by this company are high quality.	Grönroos (1994), McKenna (1999)
15. I identify myself with this company.	Demo and Ponte (2008)
14. I'm willing to buy other products/services from this company.	Ravald and Grönroos (1996), Reichheld and Sasser (1990)
17. This company offers personalized customer service.	Demo and Ponte (2008)
110. This company tries to get to know my preferences, questions and suggestions.	Payne (2006)
117. This company has good facilities (either physical, in case of stores, or virtual, in case of websites).	Grönroos (1994), McKenna (1999)
18. The products/services sold by this company are a good value (the benefits exceed the cost).	Grönroos (1994), McKenna (1999)
111. This company rewards my loyalty.	Sheth and Parvatiyar (2002), Payne (2006)

Brazil by Rozzett and Demo (2010a, 2010b) were the basis for the validation conducted in the US. The comparison between the scales, regarding the exploratory factor analyses, drove us to the conclusion that the one-factor structure validated in Brazil remained stable in the American sample with respect to its validity and reliability, but the model validated in the US presented a leaner structure compared to the Brazilian complete version.

We should emphasize that respondents' questionnaire fatigue contributes to the response rate (Saunders et al., 2009) and therefore shorter questionnaires may have a greater response rate. The

problem with the Brazilian abridged version (8 items) is that its few numbers of items could probably compromise the comprehensiveness of the construct. Pasquali (2010) argues that a construct with about 15 or 20 items with good factor loadings is reliable, stable and well represented. Thus, we might affirm that American version of CRMS is better for test in other countries and cultures.

In sum, the study performed in this paper produce a one-factor measure for CRM with reliability, construct validity and theoretical consistency that may be used in the US and also in other countries to assess the relationship between customers and companies in general.

6.1 Academic And Managerial Implications

The present study makes both academic and managerial contributions. First, it is an attempt to develop a model of CRM specifically designed for the B2C market, unattended so far. Second, empirical evidence that the CRM scale validated in the US is both reliable and valid constituting a measure that can be used in relational studies from the Marketing field was provided.

As to managerial implications, CRMS might be used as an instrument of evaluation to help managers better understand how to meet client's needs in order to deliver high-value products and services and get their loyalty through a long-term and profitable relationship.

Beyond, there is theoretical and empirical evidence that CRM is a critical success factor for business performance (e.g., Ryals and Payne, 2001; Sheth and Sisodia, 2002; Sin et al., 2005; Huang and Xiong's, 2010, Ernst et al., 2011).

Consequently, the CRMS may support managers' decision making and problem solving regarding identification of CRM areas where specific improvements are needed in order to achieve better organizational outcomes.

6.2 Limitations and Directions for Future Research

The proposal of this chapter represents a first attempt to develop and test a CRM scale designed specifically for the B2C market in general. In spite of the scale's validation in Brazil, it would be useful to further assess the generalizability of the CRMS to other business environments such as European and Asian countries. Moreover, a confirmatory factor analysis using structural equation modeling must be run to confirm the structure obtained through EFA. With more replicative and creative research, a more comprehensive conceptual framework related to CRM can be developed in the future.

Also, the development of a time-series database and testing of the CRM structure validated here in a longitudinal framework would provide a refinement of the scale. Continued validations of the CRMS is recommended based on further research about new CRM trends, perspectives and also contemplating changes in business environments, so that a reliable measure of CRM aspects related to the business-to-consumer market can be developed on a continual basis. In this meaning, there could be a need of alteration or even deletion of original items.

Additionally, items representing aspects of CRM very disclosed and mentioned as important in the literature could be included in further validations, such as: the existence of communication channels for customers' complaints and suggestions (e.g., toll free, online customer service, etc), the encouragement of interaction among its customers (e.g., events, Facebook, etc), the offering of convenience to the customers (e.g., online services, home delivery, 24-7 customer service), the importance of the company be socially and environmentally friendly, if there are competitors to the company that have the same importance to its clients, the disclosure of information about the companies' policies, projects, products/services and new releases, and so forth.

7 Conclusion

The purpose of this study was to develop and validate a reliable and valid scale to measure customers' perceptions regarding aspects they consider relevant in their relationship with companies in general that might influence their shopping experiences. An instrument, the Customer Relationship Management Scale (CRMS), was produced showing validity, high reliability and construct validity as well.

It's interesting to notice that in spite of the differences between B2C and B2B markets (Peppers and Rogers, 2001), some items are common by comparing the scale presented here and the one validated by Wilson and Vlosky (1997) for the B2B market, such as trust, information exchange and commitment (e.g., intention to purchase in the future), leading us to the conclusion that independent on the market, there are crucial elements when the objective is to establish long-term relationships through CRM. On the other hand, factors such as dependence on the supplier, comparison among suppliers and investments in the relationship are specific to the B2B market.

To sum up, a new purpose of how CRM strategies can be managed in the B2C market, where demands for convenience, customization and long-term relationships are increasing, is presented in order to provide superior organizational outcomes.

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