

# Uncertain Supply Chain Management

homepage: [www.GrowingScience.com/uscm](http://www.GrowingScience.com/uscm)

## The customer relationship management process: its measurement and impact on performance

Naser Azad<sup>a\*</sup> and Fatemeh Ahmadi<sup>b</sup>

<sup>a</sup>Assistant Professor, School of Industrial Engineering, South Tehran Branch, Islamic Azad University, Tehran, Iran

<sup>b</sup>Master student, School of Industrial Engineering, South Tehran Branch, Islamic Azad University, Tehran, Iran

### CHRONICLE

#### Article history:

Received March 15, 2014

Received in revised format

28 July 2014

Accepted August 29 2014

Available online

September 7 2014

#### Keywords:

Customer relationship  
management

Explanatory factor analysis

Delphi method

### ABSTRACT

Customer relationship management (CRM) systems track and measure marketing campaigns over different networks. There are literally many studies associated with the implementation of CRM in different industries. This paper presents an empirical investigation to determine effective factors influencing on the success of CRM implementation. The study designs a questionnaire in Likert scale on measuring various factors and distributes it among selected employees who work for the biggest software maker firm in city of Tehran, Iran. Using principal component analysis, the study has detected five factors influencing on the success of CRM including customer relationship technologies, customer oriented, enterprise development strategies, customer services and business plan.

© 2015 Growing Science Ltd. All rights reserved.

## 1. Introduction

Customer relationship management (CRM) systems track and measure marketing campaigns over different networks (Mishra & Mishra, 2009; Payne & Frow, 2005). CRM is used in various systems such as call centers, social media, direct mail, data storage files, banks, and customer data queries (Bull, 2003; Awasthi & Sangle, 2012). The CRM codifies the interactions between firm and its customers to maximize sales and profit using analytics and gives the users as much information on where to concentrate for marketing and customer service to maximize revenue (Wang & Feng, 2012). There are literally many studies associated with the implementation of CRM in different industries. Nguyen and Simkin (2013) provided some insights into how advantaged and disadvantaged customers perceive fairness in retailers' marketing tactics. In their survey, failure to appreciate the pitfalls for visibly treating certain customers more favorably and others demonstrably less so, will have stark outcomes for retail management as well as consumer marketing. Kim et al. (2012) explored the existing gap between actual bank CRM implementation and customers' expectations of those actions in association with customer retention using a survey method. They reported that an incompatibility existed between the interval of actual CRM implementation activities and customers' expectations of the interval and that this incompatibility had an adverse impact on customers'

\* Corresponding author

E-mail address: [n\\_azad@azad.ac.ir](mailto:n_azad@azad.ac.ir) (N. Azad)

willingness to stay in the relationship. Ata and Toker (2012) investigated the effect of customer relationship management adoption in business-to-business (B2B) markets. The results indicated that CRM adoption had a significant positive impact on both customer satisfaction and organizational performance in B2B settings. Mohammad et al. (2013) studied the relationship between CRM dimensions and different characteristics of organization performance such as financial, customer, internal process, and learning and growth in Malaysian hotels. The results of this study recommended that all dimensions of CRM had a positive and significant effect on various perspectives of hotel performance. According to Saarijärvi et al. (2013), CRM developed a separate identity because of firms utilising customer data in managing customer relationships. In this evolution, CRM has become a heavily firm-oriented construct where customer data were applied instrumentally to serve firms' purposes. Nevertheless, as firms increasingly shift attention from selling products to serving customers, traditional CRM activities, such as segmentation and cross-selling, could prove unsuitable owing to their inherent orientation towards selling more products/services to customers. The perspective on customer data usage requires to better describe the strategic objective of serving customers. Saarijärvi et al. (2013) reconfigured the role of customer data within the CRM framework. In their survey, four CRM waves are determined, which could characterise the evolving role of customer data in CRM and help determine new directions for customer data usage. The concentration is now shifted from the internal to the external implementation of customer data.

## 2. The proposed study

This paper presents an empirical investigation to determine effective factors influencing on customer relationship management. The study designs a questionnaire in Likert scale on measuring various factors and distributes it among selected employees who work for the biggest software maker in city of Tehran, Iran. The sample size is calculated as follows,

$$n = \frac{N \times z_{\alpha/2}^2 \times p \times q}{\varepsilon^2 \times (N - 1) + z_{\alpha/2}^2 \times p \times q}, \quad (1)$$

where  $N$  is the population size,  $p = 1 - q$  represents the yes/no categories,  $z_{\alpha/2}$  is CDF of normal distribution and finally  $\varepsilon$  is the error term. Since we have  $p = 0.5$ ,  $z_{\alpha/2} = 1.96$  and  $N = 900$ , the number of sample size is calculated as  $n = 310$ . The overall questionnaire was validated by distributing the questionnaire among 10 experts and Cronbach alpha was calculated for all components of the survey, which were well above the minimum acceptable level of 0.7. In addition, Kaiser-Meyer-Olkin Measure of Sampling Adequacy was equal to 0.777, which is, again, well above the minimum desirable level. Table 1 demonstrates the results of communalities for 29 questions of the survey.

**Table 1**

The summary of communalities

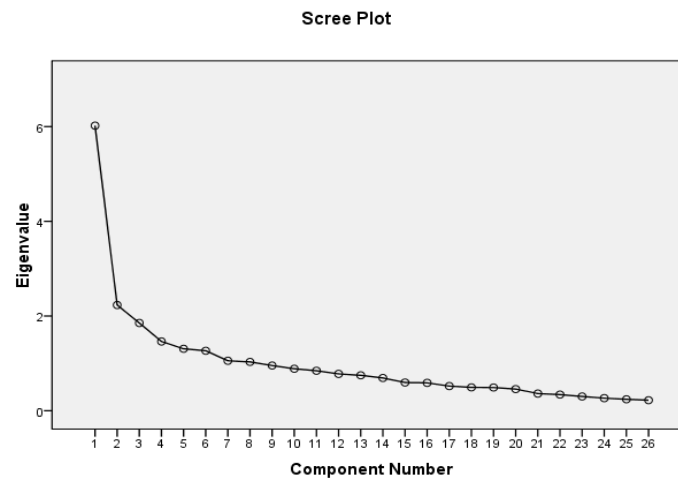
Variable	Initial	Extraction	Variable	Initial	Extraction
VAR00002	1.000	.639	VAR00016	1.000	.635
VAR00003	1.000	.548	VAR00017	1.000	.492
VAR00005	1.000	.588	VAR00018	1.000	.697
VAR00006	1.000	.558	VAR00019	1.000	.685
VAR00007	1.000	.726	VAR00020	1.000	.653
VAR00008	1.000	.649	VAR00021	1.000	.586
VAR00009	1.000	.708	VAR00022	1.000	.682
VAR00010	1.000	.770	VAR00023	1.000	.603
VAR00011	1.000	.689	VAR00024	1.000	.643
VAR00012	1.000	.679	VAR00025	1.000	.639
VAR00013	1.000	.531	VAR00026	1.000	.518
VAR00014	1.000	.544	VAR00027	1.000	.630
VAR00015	1.000	.490	VAR00029	1.000	.643

As we can observe from the results of Table 1, all components of the survey are well above the minimum acceptable level. Table 2 presents the results of principle component analysis.

**Table 2**  
The summary of principle component analysis

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.020	23.152	23.152	6.020	23.152	23.152
2	2.232	8.584	31.736	2.232	8.584	31.736
3	1.853	7.127	38.863	1.853	7.127	38.863
4	1.462	5.624	44.488	1.462	5.624	44.488
5	1.308	5.030	49.517	1.308	5.030	49.517
6	1.266	4.871	54.388	1.266	4.871	54.388
7	1.055	4.056	58.444	1.055	4.056	58.444
8	1.030	3.963	62.407	1.030	3.963	62.407
9	.954	3.668	66.075			
10	.886	3.408	69.483			
11	.845	3.249	72.732			
12	.777	2.989	75.721			
13	.747	2.875	78.596			
14	.691	2.658	81.254			
15	.596	2.291	83.545			
16	.588	2.262	85.806			
17	.520	2.000	87.806			
18	.493	1.895	89.701			
19	.490	1.883	91.584			
20	.457	1.758	93.342			
21	.361	1.390	94.732			
22	.341	1.311	96.043			
23	.301	1.156	97.199			
24	.265	1.020	98.219			
25	.241	.926	99.145			
26	.222	.855	100.000			

According to the results of Table 2, there are 8 influencing factors and we use varimax rotation technique to extract the important components. In addition, Scree plot has been implemented to extract the important factors show in Fig. 1 as follows,



**Fig. 1.** The summary of Scree plot

According to the results of Fig. 1, there are five factors influencing on customer relationship management. Table 3 shows the results of our investigation.

**Table 3**

The summary of principal component analysis using Varimax rotation

	1	2	3	4	5	6	7	8
VAR00009	.601		.480					
VAR00020	.592	.474						
VAR00015	.592							
VAR00016	.586			.425				
VAR00023	.574							
VAR00017	.543							
VAR00008	.531			.443				
VAR00022	.524	-.338						
VAR00003	.521						-.353	
VAR00018	.520	.427	-.429					
VAR00021	.512							
VAR00013	.491							
VAR00024	.465	-.409				-.372		
VAR00026	.445		-.365					
VAR00005	.440	-.346						.353
VAR00014	.422	.360			-.391			
VAR00007	.427	.596	-.358					
VAR00019	.428	.435	-.346		.340			
VAR00010		.357	.683					
VAR00011	.391		.518		.435			
VAR00027	.481			-.564				
VAR00012	.405			-.551		.403		
VAR00006				.338				
VAR00029	.432				-.496			
VAR00002						.544		
VAR00025	.479						.516	

According to the results of Table 3 and Fig. 1, we may extract five important factors summarized in Fig. 2 .

### 3. The results

According to the results of Table 3, there are five factors associated with the proposed study of this paper including customer relationship technologies, customer oriented, enterprise development strategies, customer services and business plan.

#### 3.1. Customer relationship technologies

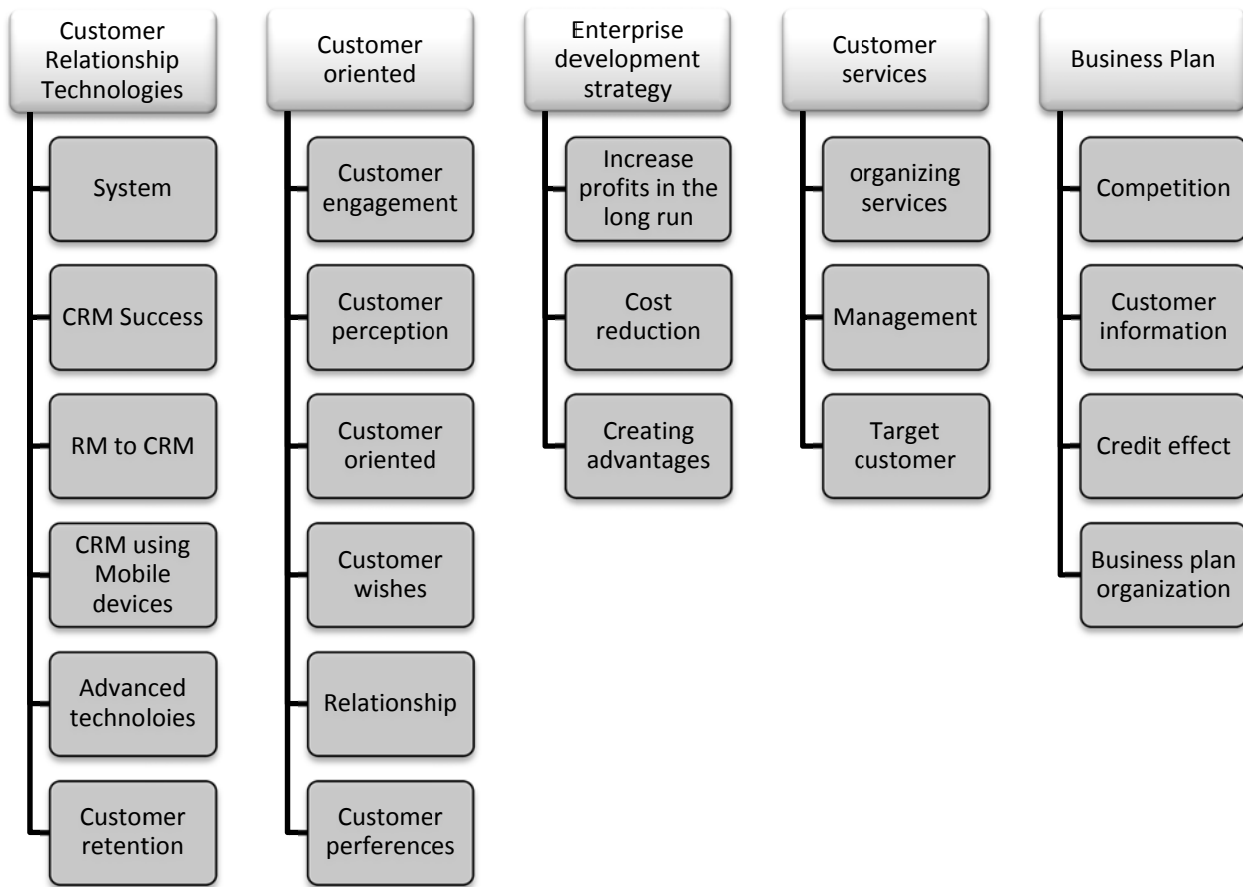
Customer relationship technologies is the first factor in this study and Table 4 exhibits details of sub-factors.

**Table 4**

The summary of the components associated with customer relationship technologies

Sub-component	Factor loading	Eigenvalues	% of variance	Accumulated
System	.794	6.020	23.152	23.152
CRM Success	.773			
Converting RM to CRM	.771			
CRM using Mobile devices	.687			
Advanced technoloies	.564			
Customer retention	.554			

As we can observe from the results of Table 4, having efficient system is number one priority followed by CRM success, converting RM to CRM, CRM using mobile devices, advanced technologies and customer retention.



**Fig. 2.** The structure of five important factors

*3.2. Customer oriented*

Being customer oriented is the second factor in this study and Table 5 summarizes sub-factors.

**Table 5**

The summary of the components associated with being customer oriented

Sub-component	Factor loading	Eigenvalues	% of variance	Accumulated
Customer engagement	.651	2.232	8.584	31.736
Customer perception	.671			
Customer orientation	.582			
Customer wishes	.671			
Relationship	.594			
Customer preferences	.683			

As we can observe from the results of Table 5, customer preferences is number one priority followed by customer perception and wishes and customer engagement.

*3.3. Enterprise development strategy*

Enterprise development strategy is the third factor in this study and Table 6 shows the sub-factors.

**Table 6**

The summary of the components associated with enterprise development strategy

Sub-component	Factor loading	Eigenvalues	% of variance	Accumulated
Increase profits in the long run	.851	1.853	7.127	38.863
Cost reduction	.815			
Creating advantage	.797			

As we can observe from the results of Table 6, Increase profits in the long run is the most important factor followed by cost reduction and creating advantage.

### 3.4. Customer services

Customer services is the fourth factor in this study and Table 7 summarizes the sub-factors.

**Table 7**

The summary of the components associated with customer services

Sub-component	Factor loading	Eigenvalues	% of variance	Accumulated
Organizing services	.794	1.462	5.624	44.488
Management	.837			
Target customer	.616			

As we can understand from the results of Table 7, management plays the key role in this part and organizing services as well as target customer are other factors.

### 3.5. Business plan

Business plan is the last factor in this study and Table 8 summarizes sub-factors.

**Table 8**

The summary of the components associated with business plan

Sub-component	Factor loading	Eigenvalues	% of variance	Accumulated
Competition	.737	1.266	4.871	54.388
Customer information	.726			
Credit effect	.657			
Business plan organization	.505			

As we can observe from the results of Table 8, building a good competition is the most important factor influencing on business plan followed by customer information, credit effect and business plan organization.

## 4. Conclusion

In this paper, we have presented an empirical investigation to study the important factors influencing on customer relationship management development. The proposed study of this paper has designed a questionnaire, distributes it among some experts and using principal component analysis detected five factors. Customer relationship technologies was the first factor in this study with six components where having efficient system has been number one priority followed by CRM success, converting RM to CRM, CRM using mobile devices, advanced technologies and customer retention.

Being customer oriented is the second factor influencing on customer relationship management with six factors where customer preferences has been number one priority followed by customer perception and wishes and customer engagement. Enterprise development strategy is the third factor

in this study with three factors where increase profits in the long run is the most important factor followed by cost reduction and creating advantage.

Customer services is the fourth factor in this study with three factors including Organizing services, Management and Target customer. Finally, Business plan is the last factor in this study, which influences on customer relationship management. The results of this study are consistsnet with other studies (Chen & Popovich, 2003; Zablah et al., 2004; Reinartz et al., 2004; Saarijärvi et al., 2013). Wang and Feng (2012), for instance, investigated the use of CRM at the bottom of the pyramid and reported that CRM was the key strategic tool that could be implemented by firms and could be facilitated by firms' relationships and connections to consumers' social networks.

Mithas et al. (2005) in a comprehensive study investigated why customer relationship management applications could significantly influence on customer satisfaction. In their survey, an analysis of archival data for a cross-section of U.S. firms demonstrated that the implementation of CRM applications was positively associated with improved customer knowledge and it could improve customer satisfaction. The study also indicated that gains in customer knowledge were enhanced when companies shared their customer-related information with their supply chain partners. Ryals and Knox (2001) discussed cross-functional issues in the implementation of relationship marketing through customer relationship management and concluded that having a good business plan could significantly contribute to the success of organizations.

## Acknowledgement

The authors would like to thank the anonymous referees for constructive comments on earlier version of this paper.

## References

- Ata, U. Z., & Toker, A. (2012). The effect of customer relationship management adoption in business-to-business markets. *Journal of Business & Industrial Marketing*, 27(6), 497-507.
- Awasthi, P., & Sangle, P. S. (2012). Adoption of CRM technology in multichannel environment: a review (2006-2010). *Business Process Management Journal*, 18(3), 445-471.
- Bull, C. (2003). Strategic issues in customer relationship management (CRM) implementation. *Business Process Management Journal*, 9(5), 592-602.
- Chen, I. J., & Popovich, K. (2003). Understanding customer relationship management (CRM): People, process and technology. *Business process management journal*, 9(5), 672-688.
- Chikweche, T., & Fletcher, R. (2013). Customer relationship management at the base of the pyramid: myth or reality?. *Journal of Consumer Marketing*, 30(3), 295-309.
- Kim, M., Park, J. E., Dubinsky, A. J., & Chaivy, S. (2012). Frequency of CRM implementation activities: a customer-centric view. *Journal of Services Marketing*, 26(2), 83-93.
- Mohammad, A. A., Rashid, B., & Tahir, S. (2013). Assessing the influence of customer relationship management (CRM) dimensions on organization performance: an empirical study in the hotel industry. *Journal of Hospitality and Tourism Technology*, 4(3), 228-247.
- Mishra, A., & Mishra, D. (2009). Customer Relationship Management: implementation process perspective. *Acta Polytechnica Hungarica*, 6(4), 83-99.
- Mithas, S., Krishnan, M. S., & Fornell, C. (2005). Why do customer relationship management applications affect customer satisfaction?. *Journal of Marketing*, 69(4), 201-209.
- Nguyen, B., & Simkin, L. (2013). The dark side of CRM: advantaged and disadvantaged customers. *Journal of Consumer Marketing*, 30(1), 17-30.
- Payne, A., & Frow, P. (2005). A strategic framework for customer relationship management. *Journal of marketing*, 69(4), 167-176.
- Reinartz, W., Krafft, M., & Hoyer, W. D. (2004). The customer relationship management process: its measurement and impact on performance. *Journal of marketing research*, 41(3), 293-305.

- Ryals, L., & Knox, S. (2001). Cross-functional issues in the implementation of relationship marketing through customer relationship management. *European management journal*, 19(5), 534-542.
- Saarijärvi, H., Karjaluoto, H., & Kuusela, H. (2013). Customer relationship management: the evolving role of customer data. *Marketing intelligence & planning*, 31(6), 584-600.
- Wang, Y., & Feng, H. (2012). Customer relationship management capabilities: Measurement, antecedents and consequences. *Management Decision*, 50(1), 115-129.
- Zablah, A. R., Bellenger, D. N., & Johnston, W. J. (2004). An evaluation of divergent perspectives on customer relationship management: Towards a common understanding of an emerging phenomenon. *Industrial marketing management*, 33(6), 475-489.