



# Ranking and Comparing Factors Affecting the Establishment of Customer Relationship Management in the Hospitals Affiliated With Tehran University of Medical Sciences, Iran

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## Abstract

**Background and Objectives:** Today's world is customer-oriented and customer is the foundation of major activities of firms. The aim of the present study was to rank factors affecting the establishment of customer relationship management (CRM) in the hospitals of Medical Sciences in Tehran.

**Methods:** A total of 290 managers of hospitals of Tehran University of Medical Sciences were surveyed by a reliable and validated questionnaire containing 46 questions related to various aspects of CRM. The collected data were analyzed by exploratory factor analysis (EFA) to extract the CRM dimensions. The extracted factors were validated by confirmatory factor analysis (CFA). Friedman test was used for ranking the factors.

**Findings:** Communication management, mission, organizational commitment, teamwork, empowerment, change management, and organizational structure were identified as the CRM factors. Relationship management and organizational structure gained the highest and lowest ranks, respectively

**Conclusions:** Communication and change management play an important role in the implementation of the customer-orientation. Executive managers of hospitals can effectively enhance CRM by promoting relationship management and communication skills among employees.

**Keywords:** Customer relationship management, Customer-orientation, Hospital

## Background and Objectives

Quality is the major factor making a services firm distinct from the others.<sup>1</sup> Customers are the most important assets of commercial firms<sup>2</sup> and customer satisfaction is the foundation of all activities of the organization.<sup>3</sup> Professional customer relationship management (CRM) is not only considered as a competitive advantage, but is also transformed into a requirement for realization of the organizational goals.<sup>4</sup> Health industry among all industries,<sup>5</sup> represents the greatest need for professional CRM.<sup>6</sup>

According to Liou<sup>7</sup> CRM is a business strategy that should be followed based on a customer-centric approach. Implementation of CRM requires changing the

organizational culture, processes, and systems to adapt CRM philosophy.<sup>8</sup> Customer-orientation in health has several dimensions, including emphasize on the patient satisfaction, emphasize on services quality,<sup>9,10</sup> and employee job satisfaction (working conditions, colleagues and supervisors, job promotion),<sup>11</sup> commitment of senior managers,<sup>12</sup> directing the spirit of the staff towards the customers' expectations,<sup>13</sup> communication management,<sup>14</sup> and employee empowerment.<sup>15</sup>

The staff is the major factor in ensuring customer satisfaction and thus employees require knowledge and skills to treat customer according to their needs and their expectations<sup>10</sup> as in the study conducted by Vazifehdoost et al emphasized on customer- relation and paying attention to the needs and expectations of customers.<sup>16</sup> Under environmental competitive pressures, health-care providers have to offer better services to their patients. CRM can support services quality improvement and

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enhance on organizational performance.<sup>17</sup>

Job satisfaction improves performance of employees.<sup>18</sup> On the other hand, employee's job satisfaction, satisfaction with working conditions, colleagues and supervisors, as well as job promotion would lead to customer-orientation.<sup>11,15</sup>

According to Kennedy et al the commitment of the senior managers to use all sub-organizational information in decision-making is crucial in the implementing customer-oriented thinking.<sup>12</sup> The usage of appropriate relationship with the customers value to organization<sup>19</sup> as a good clinical performance including suitable communication.<sup>20</sup> According to Hadizade Moghaddam et al, commutation management is the most important factor in the establishment of the CRM.<sup>21</sup>

Implementation of CRM often requires a change in current organizational structures and the business processes.<sup>22</sup> Studying the implementation of the concept of CRM in Mellat Bank, Mehrabi et al identified organizational culture, organizational structure and information technology as the most influential factors.<sup>23</sup>

While several studies have explored factors affecting CRM in Iran, few have focused on hospitals. The purpose of the present study was to identify and rank factors affecting CRM in teaching hospitals of Tehran University of Medical Sciences (TUMS).

## Methods

### Study Tool

Constructions and items were according to the expert opinions and comparatives studies. The data was collected using a questioner containing 46 questions related to 7 dimensions of organizational culture, employee satisfaction, empowerment, communication management, change management, organizational structure, and organizational commitment. The answers were scored based on the 5-item Likert-type scale (1 = very low to 5 = very high).

In order to confirm the validity of the questionnaire, it was distributed among ten university professors and ten hospital executive managers and they were asked to express their opinions on the content, structure, and wording of the questionnaire. After applying the opinions of experts, in a test run, the questionnaire reliability was confirmed by Cronbach  $\alpha$  of 0.935.

### Data Collection

Study participants included senior, middle and operating nurses, supervisions, heads of departments, and managers of hospitals of TUMS (N = 290). Due to the limited population, the questionnaire was distributed to

all managers. A total of 215 (144 women and 71 men) completed questionnaires were returned.

### Data Analysis

The hidden factors were extraction by the exploratory factor analysis (EFA). Normality of the data was examined by Kolmogorov-Smirnov (KS) test. The extracted factors were verified by confirmatory factor analysis (CFA). Friedman test was used to rank the factors. SPSS version 22 and Smart PLS version 2 software packages were used for data analysis.

## Results

### Factor Analysis

Given that the significance of KMO (Bartlett test), application of factor analysis was allowed. In order to extract a set of variables, factor analysis was performed for all 46 questions of the questionnaire. Common numbers of all questionnaires were greater than 0.5, which indicates that it is appropriate. After implementation of varimax rotation with Kaiser normalization method the main components were identified. All the main operating parameters were 9 items which covered 63.2% of the variance of total factors. The factors were included organizational culture, communication management, organizational commitment, organizational structure, employee satisfaction, empowerment, teamwork, management demonstration mission of the organization. The acceptable normality of all variables was assured by KS test.

### Confirmatory Factor Analysis

The CFA is one of the oldest statistical techniques which is used to examine the relationship between the latent variables (obtained factors) and the observed variables (questions) and are indicative of the measurement model.

### Measurement Model

Table 1 presents the characteristics of the measurement model. The average variance extended (AVE) of > than 0.5(24), Cronbach  $\alpha$  >0.7 and composite reliability was >0.6 for all variables suggest the appropriate reliability and validity of the model.<sup>26</sup> The goodness of feet (GOF = 0.722 \* 0.732 = 0.566) was calculated to be 0.566, which is >0.4 indicating the perfect fitness of the theoretical model to CRM data.<sup>27</sup> Amount of GOF represents the alignment of the questions with the theoretical constructs.

### Estimation and Testing the Model

According Figure 1, factor loading of 15 items (employee satisfaction) were less than 0.5. It is necessary to delete this index from the model and the model should be re-

**Table 1.** Items' Validity and Reliability

Latent Variables	AVE	CR	R <sup>2</sup>	Cronbach α
Empowerment = E	0.551	0.859	0.525	0.794
Mission = M	0.755	0.861	0.345	0.777
Employee Satisfaction = S	0.564	0.885	0.644	0.842
Organizational Culture = OC	0.573	0.862	0.611	0.812
Communication Management = CM	0.581	0.866	0.611	0.82
Organizational Commitment = C	0.529	0.87	0.606	0.822
Change Management = CH	0.563	0.794	0.476	0.716
Organizational Structure = OS	0.572	0.841	0.501	0.776
Teamwork = T	0.685	0.867	0.506	0.769
Customer Relationship Management = CRM	0.693	0.949	0	0.945

$\sqrt{AVE} = 0.772, \sqrt{R^2} = 0.732, GOF = 0.566$

estimated regardless of that.<sup>28</sup> The loading factors of the remaining items were more than 0.5 where the validity of index can be confirmed. Therefore, it can be valid to measure the concepts at this stage. As Table 2 shows Freedman test identified significant difference identified significant difference between ranks of the identified factors (chi-square = 155.72, *df* = 8, *P* < 0.0001). Table 3 presents the ranks of factors. The relationship management and organizational structure represent the highest and lowest ranks, respectively.

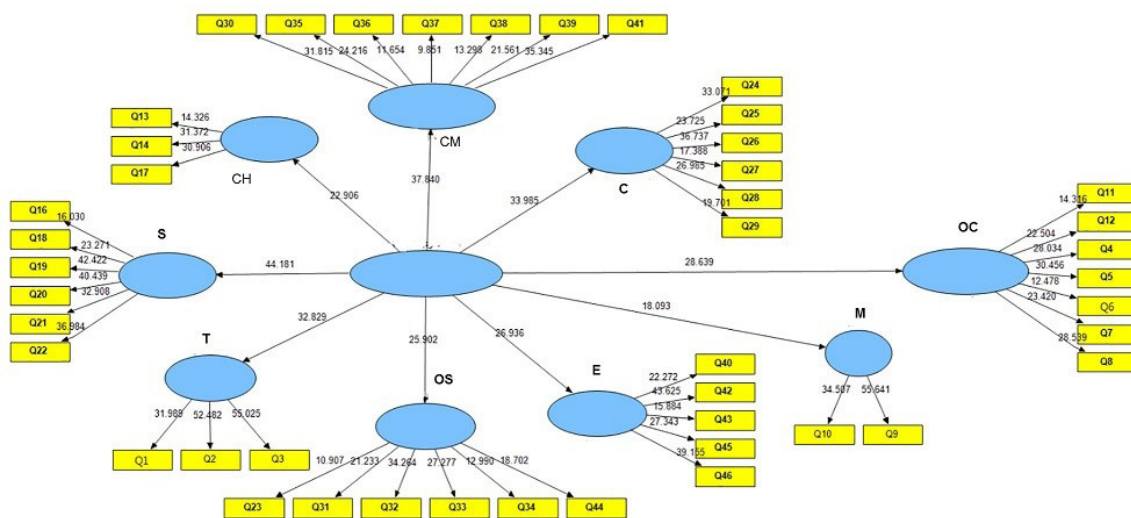
**Discussion**

According to the analysis of results, CRM in the teaching hospitals is influenced by factors including relationship management, employee satisfaction, mission, organizational commitment, teamwork, empowerment, change management, and organizational culture. Successful implementation of CRM requires a change

in organization, structure, and business processes.<sup>29,30</sup> Knowing about organizational mission is a basic step to understand the organization and characterize the behavior and performance of members. Our results showed a positive relationship between mission and CRM in hospitals of Medical Sciences in Tehran University, which is consistent with the findings of Saadati et al based on Denison model.<sup>31</sup>

Relationship is a content process because it is highly dependent on the human experience. Complexity of relationships, requires employees/managers to gain knowledge and skills necessary to communicate the environment.<sup>32</sup> Previous studies identified relationship management as an important factor in the establishment of CRM,<sup>21</sup> which is consistent with the current study.

Commitment arises as a human attitude and there is no doubt that employees with higher organizational commitment usually enjoy higher performance. Lacey



**Figure 1.** The modified version (removing the questions with the loading factors less than 0.5) in the condition of the estimated standardized coefficients.

**Table 2.** Friedman Test's Significance

Statistical Indicators	Calculated Values
Number	215
$\chi^2$	155.716
<i>df</i>	8
<i>P</i> value	0.0001

**Table 3.** The Mean Scores in Friedman's Test

Mean Score	Variables
4.41	Cultural Organization
6.40	Communication Management
5.26	Organizational Commitment
3.82	Organizational Structure
5.86	Employee Satisfaction
4.53	Empowerment
4.93	Teamwork
4.44	Change Management
5.34	Mission

and Kalaj showed that organizational commitment of employees with adequate level of performance, positively affects customers. Moreover, organizational commitment in terms of values, attitudes, and beliefs is the basis for good relations with customers.<sup>33</sup> Our results are congruent with these previous findings.

Happy employees are more likely to be productive. Although it is difficult to say which direction the causality is, a review of previous research in this area showed that the correlation is relatively strong.<sup>18</sup> The results of Orina about successful implementation of CRM in the banking system in Burma<sup>15</sup> it consistent with the present research in terms of employee satisfaction.

Empowerment includes the enhancement of employee skills, creating confidence in them, and improving their organizational performance. In line with our findings, Vazifehdoost et al<sup>16</sup> identified a relationship between the employee empowerment and customer-orientation suggested that managers must have distinct capabilities, skills, experiences and social intelligence in order to have efficient and effective organizations.

The organizational structure was emphasized as a contributor to CRM in our study. Change management is the process of continuous modernization of orientations, structure and organization capabilities to meet the changing needs of domestic and foreign customers.<sup>34</sup> Mehrabi et al in the study of change management implementation in Mellat Bank<sup>23</sup> identified the changes in organizational structure as a requirement for successful implementation of CRM. Therefore, organizational structure should have the flexibility to adapt the constant change according to

**Table 4.** Descriptive Results of Means and Standard Deviation and Sample Size

Hospital		Mean	SD	Sample Size
CO	A	3.784	0.317	19
	B	3.440	0.607	12
	C	3.677	0.443	12
	D	4.063	0.429	9
	E	3.821	0.636	22
	F	3.893	0.462	16
	G	3.649	0.607	11
	H	3.637	0.635	13
	I	4.069	0.632	12
	J	3.735	0.651	14
	K	3.708	0.737	23
	L	3.898	0.761	14
	M	3.962	0.701	38
Total		3.810	0.621	215
CM	A	4.014	0.454	19
	B	3.750	0.679	12
	C	3.833	0.618	12
	D	3.952	0.371	9
	E	4.107	0.513	22
	F	4.205	0.532	16
	G	4.357	0.560	11
	H	3.956	0.397	13
	I	4.381	0.492	12
	J	4.265	0.345	14
	K	4.217	0.621	23
	L	4.418	0.464	14
	M	4.470	0.527	38
Total		4.190	0.551	215
C	A	3.956	0.411	19
	B	3.519	1.132	12
	C	3.714	0.728	12
	D	4.074	0.657	9
	E	3.880	0.480	22
	F	4.094	0.491	16
	G	4.091	0.569	11
	H	3.641	0.700	13
	I	3.944	0.557	12
	J	3.857	0.502	14
	K	3.978	0.620	23
	L	4.095	0.619	14
	M	4.140	0.710	38
Total		3.950	0.647	215
OS	A	3.725	0.358	19
	B	3.306	0.647	12
	C	3.806	0.631	12
	D	3.796	0.605	9
	E	3.629	0.644	22
	F	3.794	0.421	16
	G	3.848	0.693	11
	H	3.500	0.461	13
	I	3.806	0.512	12
	J	3.524	0.647	14
	K	3.649	0.586	23
	L	3.798	0.757	14
	M	4.018	0.686	38
Total		3.737	0.616	215

Table 4. Continued

S	A	4.015	0.378	19
	B	3.500	0.712	12
	C	3.702	0.764	12
	D	4.079	0.572	9
	E	4.032	0.525	22
	F	4.152	0.543	16
	G	3.994	0.655	11
	H	4.009	0.694	13
	I	4.274	0.508	12
	J	4.143	0.532	14
	K	4.106	0.619	23
	L	4.143	0.651	14
	M	4.252	0.634	38
Total	4.065	0.613	215	
E	A	3.947	0.537	19
	B	3.322	0.827	12
	C	3.850	0.656	12
	D	3.711	0.584	9
	E	3.782	0.684	22
	F	3.794	0.594	16
	G	3.782	0.328	11
	H	3.808	0.554	13
	I	4.017	0.556	12
	J	3.800	0.543	14
	K	3.835	0.692	23
	L	3.800	0.888	14
	M	4.126	0.682	38
Total	3.856	0.658	215	
T	A	3.842	0.560	19
	B	3.417	0.780	12
	C	3.722	0.886	12
	D	4.407	0.572	9
	E	3.985	0.654	22
	F	3.854	0.730	16
	G	4.121	0.543	11
	H	3.718	0.768	13
	I	3.806	0.745	12
	J	3.738	0.602	14
	K	3.768	0.890	23
	L	4.262	0.775	14
	M	4.044	0.783	38
Total	3.904	0.747	215	

Table 4. Continued

CH	A	3.781	0.583	19
	B	3.278	0.776	12
	C	3.847	0.557	12
	D	3.889	0.577	9
	E	3.833	0.532	22
	F	3.917	0.537	16
	G	3.576	0.539	11
	H	3.449	0.786	13
	I	3.778	0.574	12
	J	3.762	0.733	14
	K	3.768	0.813	23
	L	3.881	0.699	14
	M	4.096	0.558	38
Total	3.805	0.655	215	
M	A	3.974	0.539	19
	B	3.542	0.811	12
	C	3.750	0.544	12
	D	4.167	0.661	9
	E	4.000	0.636	22
	F	4.031	0.846	16
	G	4.000	0.866	11
	H	3.962	0.519	13
	I	4.250	0.622	12
	J	4.107	0.684	14
	K	3.783	0.751	23
	L	4.071	0.978	14
	M	3.947	0.742	38
Total	3.958	0.717	215	

Abbreviations: CO, Cultural Organization; CM, Communication Management; C, Organizational Commitment; OS, Organizational Structure; S, Employee Satisfaction; E, Empowerment; T, Teamwork; CH, Change Management; M, Mission.

the new needs and costumers' expectations.

## Conclusions

Customer-orientation is the foundation of all major activities of modern organizations. According to our results factors including relationship management, employee satisfaction, mission, organizational commitment, teamwork, empowerment, change management and organizational structure can influence implementation of customer-relationship management in teaching hospitals. Therefore, managers of teaching hospitals can enhance CRM by promoting the customer-orientation culture, relationship management and communication skills among employees.

## Abbreviations

(CRM): customer relationship management; (EFA): exploratory factor analysis; (CFA): confirmatory factor analysis.

## Competing Interests

The authors declared no competing interests.

## Authors' Contributions

The authors made similar contributions to this work.

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