Research Article
Design a Model to Assess CRM Maturity in the Organization Using AHP

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Abstract: According to different nature of work in various companies, the essential step in implementation of optimal customer relationship management is identifying factors affecting CRM performance and indicators related to each factor. Therefore in this study, in order to assess the maturity of organization in the implementation of CRM, the main factors affecting CRM performance in the baby accessories industry were identified. Then the indicators explaining each factor were extracted and using Analytical Hierarchy Process (AHP) factors and identified indicators were ranked, and then the maturity status of the studied organization were analyzed in relation to CRM implementation. According to new and valid ideas, the main factors affecting the assessment of organizational maturity in CRM implementation are defined by three factors of processes, human resources and technology. The main factors affecting the CRM implementation were prioritized and also indicators related to the three main factors in line with the successful implementation of CRM were ranked. In order to assess the maturity of organization in CRM implementation, the binominal test was used. Except for the indicator of information technology and knowledge management which is lower than the given value for maturity level of the organization (12.5), other indicators such as strategy, organizational processes, organizational culture, human resources and change management, the studied organization in baby accessories industry has matured in CRM implementation.

Keywords: Analytical hierarchy process, customer relationship management, customer satisfaction measurement, customer satisfaction index

INTRODUCTION

Customer Relationship Management is one of the most important issues in manufacturing and service organizations. Effective implementation of customer relationship management can increase customer satisfaction, loyalty and their absorption and may result in more sales and repeat of purchases. Chalmeta (2006), some organizations face difficulties in the implementation of (CRM) because their attitude toward this issue is purely technological. It means that they consider customer relationship management strategies the same as CRM technology, while CRM is not a technological issue but is a professional issue and requires assignment of modern information tools, and should be designed and coordinated with professional operations and strategies. AbellaGarces *et al.* (2004), clearly stoppage or failure of these projects is often the result of ignoring the required activities for the implementation of CRM. Babaie (2008) believed that lack of a framework for effective implementation of customer relationship management has caused such a

failure. Papasolomou-Doukakis, *et al.* (2002), in this new era of marketing, all attention is focused on understanding customer needs and expectations. Those firms can overtake other competitors which in addition to communicating with customers and understanding their needs, manage this relationship toward goals and strategies of the company and take advantage of it in the planning of organization. Keramati *et al.* (2010), Customer behavior and relationships in each Business and Trade Company is an effective and strong step to keep pace with scientific progress and new achievements of mankind, achieve prosperity and success in work, provide customer satisfaction, increase the professional spirit of staff, and finally obtain more profit for the enterprise. Alok and Mishra (2009), Communicating with customers and its effective management is one of the challenges facing organizations today. Customer relationship management is based on value exchange between the organization and customer and emphasizes on the values created in this relationship. Customer Relationship Management is a business strategy to

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create a double value that will identify all aspects of customer characteristics, creates customer knowledge, forms customer relationships and creates their perception about products or services of the organization. Hence study such a valuable concept in customer based companies is essential. Customer Relationship Management or CRM is composed of three main parts: customer, relationship and management, customer means the ultimate consumer who plays a supporting role in the value creation relationships. Almotairi (2009), Relationship means creating loyal and profitable customers through a learning relationship; management means creativity and leading a customer-oriented business process and placing customer at the center of processes and experiences of the organization. Considering the importance and impact of customer satisfaction and loyalty in increasing the market share, organizations consider customer relationship management as a tool to increase their profitability. Lindgreen *et al*. (2006), The purpose of customer relationship management is enabling organizations to deliver better services to customers through creating automated and integrated process for collecting and processing customer information, and actually management links the three parts of customer service, marketing information and sales management together.

The present research tries to take an effective step to implement a successful customer relationship management in baby accessories industry.

LITERATURE REVIEW

Several definitions of CRM have been provided and some of these valid definitions from the point of views of different theorists are offered below. Hyung-Su and Young-Gul (2009), CRM as a collection of methodologies, processes, software and systems that help institutes and companies in the effective and organized customer relationship management. Burnett (2001) customer relationship management creates and maintains personal relationships with profitable customers of the organization through proper use of information and communication technologies. Wild *et al*. (2001) customer relationship management as a process consisted of customer monitoring, management and evaluation of data and ultimately create a real advantage of extracted information in interacting with them. Hampej and Pwatman (2002) customer relationship management is a comprehensive business and marketing strategy which integrates the technology of processes and all business activities and focuses them on customer. Mishra *et al*. (2009) customer relationship management has a continuous process

consisting of creating and applying knowledge and market intelligence to create and maintain a basket of customer relationships that have the highest efficiencies. Zablah *et al*. (2004) calculates the organization rate and its degree of maturity to implement CRM. Boulding *et al*. (2005) classified the core factors influencing CRM performance into three groups of processes, human resources and technology. Mendoza *et al*. (2007) customer relationship management is a business strategy in the organization, not product or service offered by an organization. In other words, CRM is not an information technology issue, but it uses information technology to achieve its goals. This demonstrates that CRM implementation in an organization requires business strategy design not only establishment of information systems. Keramati *et al*. (2008) purpose of customer relationship management is enabling organizations to deliver better services to customers through creating automated and integrated process for collecting and processing customer information and actually management links the three parts of customer service, marketing information and sales management together. Hyung-Su and Young-Gul (2009) examines the technical and organizational impact of CRM implementation and also staff support and management support on capture, maintenance and loyalty of customer. Research results in the four key industries in 10 European countries shows that only if the CRM is taken seriously and is successfully implemented and the appropriate and applicable software is used in the company, the above four parameters will impact on capture, maintenance and loyalty of customers. Becker *et al*. (2009), customer relationship management is a comprehensive business and marketing strategy which integrates technology of processes and all business activities and focuses them on customer. Mishra *et al*. (2009). In a research sought to provide a framework for successful CRM implementation. He studied the success factors for CRM implementation in three categories of employees, processes and technology and by factor analysis techniques determined the sub-category of these three factors as: management commitment, CRM strategy, customer data management, organizational culture change, process change, information technology systems, skills, staff motivation and training, customer support, monitor, control, measurement and feedback, and the integrity of departments and components of the organization. Almotairi (2009). In a comprehensive research sought to design a model to evaluate the performance of CRM in the organization. After review of literature and valid views about CRM, they have concluded that CRM performance in the organization should be reviewed and evaluated through four components: organizational performance, customer,

process and infrastructure factors. Then using Analytical Hierarchy Process (AHP) have identified and ranked indicators that explain the four above factors. These indicators are as follows:

- The organizational performance factor (equity, profitability, customer equity)
- The customer factor (customer loyalty, customer satisfaction, customer value)
- The process factor (customers capture, customer maintenance, customer expansion)
- The underlying factors (employee behavior, employee satisfaction, management attitude, participation, market characteristics, specifying objectives, information technology and organizational capacity)

Hyung-Su and Young-Gul (2009) believed that customer relationship management is as part of the strategy in an organization to identify and satisfy customers and turning them into permanent customers. Also it assists the company in line with the company and customer relationship management and maximizes the value of each customer. Sohrabi *et al.* (2010). In a research sought to design a model to assess the readiness to implement E-CRM in B2B markets using Analytical Hierarchy Process (AHP). After the theoretical studies, he achieved factors including: strategy, organizational culture, organizational structure, change management, technology and customers. Then using the AHP model, the above mentioned factors in line with research purposes and in electronic markets were weighted.

This study identified the constituent indices of each of the aforementioned factors. Then tried to prioritize the three main factors and indicators identified in the baby accessories industry in line with evaluation of optimize and successful performance and implementation of CRM.

RESEARCH METHODOLOGY

This research in terms of purpose is an applied research and used descriptive Delphi survey for data collection which aimed at obtaining consensus from experts familiar with the subject of the article. This article by designing the research plan tried to collect literature about empowerment of human resources and then by designing the proposed conceptual model, formed a questionnaire for the statistical community. Finally, after distributing and collecting questionnaires and expert opinions and based on analysis of obtained data, conclusions and proposals will be discussed. Major tasks and activities carried out in this article include: determine the article's hypothesis, statistical population, sampling method, scope of research, data

analysis, determine validity and reliability of the questionnaire, and the article hypotheses, and then the definition and the method of each are discussed.

The necessity of research: One of the major problems in the full implementation of customer relationship management is that there is no model to guide organizations in implementation and deployment of this strategy. It is important to recognize factors affecting the performance and success of CRM in the organization, which is the subject of this research. Fotouhiyehpour (2011) in a customer-centric organization, development of capacities and facilities to achieve the necessary resources, information and tools to meet the demands of customers and offer appropriate products and services are essential.

One of the reasons of the necessity of this research and study CRM is that by transition from the traditional economy and intensification of competition in new dimensions, customer has become the linchpin of all organizational activities, in a way that from a competitive perspective, survival of organizations depends on identifying and attracting new customers as well as retaining existing customers.

Another factor that could justify the need for this study is that regarding technological advances and increased competition, the most important economic challenge facing any organization is to increase the profit of the organization. Sin *et al.* (2005) in difficult competition conditions, the timely and organized communication to customers is the best way to increase customer satisfaction, increase of sales and yet reducing expenses. Given these issues, customer relationship management in organizations is considered a kind of commercial strategy. Many successful organizations emphasize that maintaining a stable relationship with customers can guaranty their lead it the competing market.

Due to the increasing competition, organizations must be able to have a correct and timely identification of the environment and specially their customers which are the key to survive in organizational life, so by timely understanding of the customer changes and demands and needs it is possible to step toward effective interaction with the environment. Hence many successful organizations in the world have prioritized the attention to the external environment and the precise identification of customers needs through creation of environmental information systems.

The research hypotheses: The (dependent) variable is the customer relationship management. The (independent) variables defined in this article include processes factors (marketing, sales and services, etc.,) human resources (aspects related to the client, staff, organizational aspects, leadership, etc.,) and technology

(knowledge management, information systems, customer relationship management software, backup systems, etc.,) in the baby accessories industry.

The main hypothesis: The importance and priority coefficient are the same for the processes factor, human resources and technology in order to implement customer relationship management in baby accessories industry.

Sub-hypotheses: -The company under study has reached the organizational maturity to implement CRM.

Statistical population: The statistical population in this study consisted of experts and employees in the baby accessories industry (case study: Plast Mazand Industries). Azar and Momeni (2001) to determine the exact number of samples, the following formula is used:

$$n = \frac{\left(Z_{\frac{\alpha}{2}}\right)^2 \sigma^2}{(\varepsilon)^2}$$

$Z^2_{\alpha/2}$: The normal change value corresponding to the confidence level (1-α) which in this study the confidence level is 95% and is equal to 1.96.

$\sigma 2$: The variance of the population which through the initial sample (n = 40) is estimated at 0.088.

ϵ : The standard error value which in most of the studies is considered as 0.05.

Therefore the sample size in this study is:

$$n = \frac{\left(Z_{\frac{\alpha}{2}}\right)^2 \sigma^2}{(\varepsilon)^2} = \frac{(1.96)^2}{(0.05)^2}(0.088) \cong 135$$

Data collection methods: Data collection in this study is composed of two parts that include library research and field studies. For the literature review of research (library studies), mainly books, Latin and Persian articles and sources from Internet search, and information resources and libraries have been used. To prepare the required information about the parameters (field research), the questionnaire has been used. To prepare the research questionnaires and also for collecting needed information from different sectors and also to gain an overview toward the research subject, interviews with professionals in the field of research have been used.

Tools for data collection: The data collection tools briefly include books, related articles, Internet, library resources, observation, interviews and questionnaires.

The conceptual model of research: Understanding complex phenomena and large issues can be problematic for the human mind, thus decomposition of a large problem into its component elements (using a hierarchical structure) can contribute to human understanding. The relation of each element with other elements shall be identified in a hierarchical structure and at various levels, and the main existing purpose of the issue, with the lowest existing category of the composed hierarchy shall be exactly clear. Each element in these structures and of a certain level is also dominated by some or all of the existing elements in the level immediately above it. In the AHP model, three levels or stages of goal, criteria and options raised in this research include:

- The first level is the decision goal i.e., prioritization of factors and parameters affecting the performance of CRM.
- The second level is the criteria by which the statistical sample judges the options or indexes.
- The third level is also related to the option (or the identified indicators effective on CRM performance).

The following chart (Fig. 1) shows the decision hierarchy tree and the research model for prioritizing factors and indicators affecting the CRM performance.

The validity and reliability of the questionnaire: The assessment tool should be reliable and valid to enable the researcher to collect data relevant to the research and through these data and their analysis, test the desired hypotheses and answer research questions. The assessment tool is divided into two categories:

- Standardized and rated
- Made by researcher

Standardized assessment tools and questionnaires, have good validity and reliability thus researchers can apply them confidently, but the tools made by researcher (such as the measurement tool for this research) are not confident enough and the researchers should be assured of its validity and reliability. Every evaluation tool - including a questionnaire – should be valid and reliable.

Validity means to test whether the tool content or the questions in the questionnaire accurately measure the variables and the subject under study? In other words they should measure what we really desire to be measured. Validity concerns the amount of adequate information which the test provides in relation to decision-making process. So judgment about validity is always studied in relation to a specific decision or a specific application.
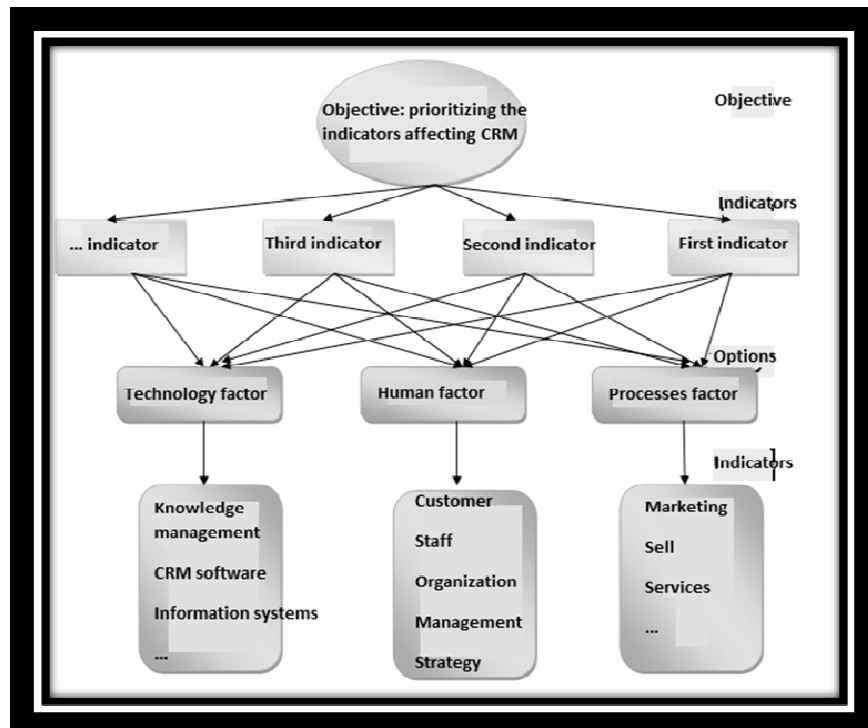
Fig. 1: The research conceptual model

Also reliability of the measurement tool means that when the measurement is repeated under the same conditions, to what extent the results are similar and reliable? A reliable measurement tool is compatible and reproducible, i.e., it can be used on several occasions and in all cases it shall produce the same result. There are different ways to calculate reliability such as the reimplementation method (retest), the parallel or unique methods, bisection or half method and the Cronbach's alpha coefficient. To estimate and provide the validity of research tools and questionnaires in this research, experts' inquiry is used and their potential reforms were applied, and to determine the reliability of the questionnaire, the Cronbach's alpha coefficient is used. To calculate the Cronbach's alpha the variance of scores for each subset of questions in the questionnaire and the total variance shall be calculated. Then, using the following formula and the SPSS software the alpha coefficient is calculated:

$$\alpha = (\frac{j}{j-1})(1 - \frac{\sum s_j^2}{s^2})$$

In which, α is estimation of test validity, j is the number of test questions, s_j^2 is the variance of the jth subset, and s^2 is the variance of the entire test. In this study, to identify reliability of the questionnaire, the Cronbach's alpha coefficient was used. The alpha for the overall Cronbach in the 40 pieces of the initial sample of questionnaire in the second part (20 questions) is 0.823 and in the third part of the questionnaire (29 questions) is 0.953 and is obtained over 0.75. Hence the questionnaire reliability was confirmed.

Data analysis: In this study, descriptive analysis and analytical methods are used for data analysis.

Descriptive data analysis: Descriptive statistics are used for data analysis. In this section, the demographic data of the statistical sample are displayed using concepts such as percentages, mean and standard deviation, frequency distribution tables and the charts.

Inferential statistics and hypothesis testing: In inferential statistics, t - student (the effect of each process in the CRM), binomial test and Analytic Hierarchy Process (AHP) are used. Also to test the data normality, Kolmogorov Smirnov test has been used.

RESULTS

Examine the descriptive statistics of research variables: The following table (Table 1) shows the

Table 1: Descriptive statistic of CRM components

Factors	N	Minimum	Maximum	Mean	S.D.	Skewness	Kurtosis
Organizational processes	135	2	5	3.13	0.045	0.160	3.151
Manpower	135	3	5	4.03	0.791	0.053	3.396
Technology	135	2	5	3.56	1.056	0.071	3.195

Table 2: Normality test using Kolmogorov-Smirnov model

	Organizational processes	Manpower	Technology
Ks-Z	0.86	1.53	1.7
p-value	0.440	0.068	0.066

Table 3: t-student test for the main factors

Test value = 3

Organizational processes	Mean	T	df	p-value
Manpower	3.3012	5.653	134	0.000
Technology	3.9746	35.143	134	0.000

descriptive statistics related to the number (N), mean, standard deviation (Std. Deviation), maximum and minimum values of variables, Kurtosis and Skewness, separated for each variable.

Evaluation of data normality: To use tests and parametric methods, research data should be normalized and otherwise, inevitably we need to use nonparametric methods to analyze and test the hypotheses. Given that the accuracy of parametric methods is higher than nonparametric methods, so the parametric models are preferred in this study. In this section (Table 2), the valid test of Kolmogorov – Smirnov is used to study the normality of variables. If the calculated significance level by the Smirnov test which is calculated with the Z statistic, considering the error level of 0.05 is higher than 0.05, the mentioned variable is normal and if it is lower than 0.05 then the variable is not normal. SPSS software was used for calculations.

As the sig value is more than 5%, in the 95% of confidence level, the hypothesis for normality of the target population distribution is not rejected and parametric tests can be used to test the research hypotheses.

T- student test to determine the impact of each indicator in CRM performance: As it is deduced by the t-student test results (Table 3) to review each of the factors influencing the CRM performance, P-value = 0.000 and is less than the significance level of one percent, and the mean value of each is higher than the test 3.

So in the 99% of confidence level, all of the three factors including organizational processes, human resources and technology are effective in the performance of customer relationship management.

Table 4: The t-student test for organization processes factor

Test value = 3

Organizational processes	Mean	t	df	p-value
Marketing factor (internal, external, micro, macro)	3.40	5.075	134	0.000
Customer-oriented strategy factor	3.39	4.348	134	0.000
Continuous assessment of performance factor	3.22	2.885	134	0.005
Organization's readiness and maturity factor	3.32	4.098	134	0.000
Allocating the adequate funding factor	3.20	2.593	134	0.011
Appropriate organizational culture factor	3.28	3.329	134	0.001

Table 5: t-student test for human resources factor

Test value = 3

Human resources	Mean	t	df	p-value
Preparation for staff culture change factor	4.01	15.870	134	0.000
Employee involvement factor	3.97	14.603	134	0.000
Reward system efficiency factor	3.83	11.325	134	0.000
Employee empowerment factor	3.97	15.613	134	0.000
Education factor	3.99	14.128	134	0.000
Employee satisfaction factor	4.01	14.204	134	0.000
Characteristics of the organizational director and leader	4.04	14.510	134	0.000

The t - student test for organization processes factor (Table 4) shows that, in the confidence level of 95%, all of the organizational processes factors are effective in the customer relationship management performance.

The t-student test for human resources factor (Table 5) shows that, in the confidence level of 95%, all of the human resources factors are effective in the customer relationship management performance.

The t-student test for technology factor (Table 6) shows that, in the confidence level of 95%, all of the technology factors are effective in the customer relationship management performance.

Assessment of organizational maturity in the CRM implementation using the ratio test (binomial): To measure the maturity of organization in CRM

Table 6: t-student test for the technology factor

Test value = 3

Technology	Mean	t	df	p-value
CRM performance software factor	3.65	7.917	134	0.000
CRM hardware infrastructure actor	3.50	5.327	134	0.000
Technological integration factor	3.59	7.046	134	0.000
Knowledge management establishment factor	3.48	5.479	134	0.000

Table 7: The binomial tests for indicators related to CRM performance

	Grouping	Total	Ratio
Strategy	>12.5	73	0.54
	<12.5	62	0.46
Organizational process	>12.5	74	0.55
	<12.5	61	0.45
Organizational culture	>12.5	72	0.53
	<12.5	63	0.47
Organizational individuals	>12.5	129	0.96
	<12.5	6	0.04
Information Technology	>12.5	6	0.04
	<12.5	129	0.96
Knowledge management	>12.5	62	0.46
	<12.5	73	0.54
Change Management	>12.5	126	0.93
	<12.5	9	0.07

implementation, the binominal test was used. Thus the total score of each of the indicators (Table 7) are classified in two groups (less than a fixed value of 12.5 = code one, more than a fixed value of 12.5 = code two). If the ratio of the first group is more than the second group, then the organizational customer relationship management in the target baby accessory industry has matured.

According to the Binomial test and comparison the ratio of the two groups in each of the indicators, it is inferred that except the index of information technology and knowledge management which is lower than given amount for organizational maturity level in CRM implementation (12.5), other indicators including strategy, organizational processes, organizational culture, organizational individuals and change management of the target organization in baby accessories industry has reached the CRM maturity.

Prioritizations of factors affecting CRM maturity by AHP method: In this section the results of ranking the factors effective on CRM maturity obtained by questionnaire and AHP methods are briefly mentioned.

Ranking the main factors affecting CRM maturity using AHP: Analytical Hierarchy Process (AHP) is a multi-criteria decision making process and there are at least three different levels in each of its models so the elements in each level are related. The first level is"goal" and is related to the goal of decision maker after the model processing. The second level is related

Table 8: Paired comparison matrix to see people of different options

n_i	M1	M2	M3
M1	1	A_{12}	A_{13}
M2	A_{21}	1	A_{23}
M3	A_{31}	A_{32}	1

Table 9: The primary matrix for paired comparison of criteria from the perspective of the first question, respondents

First respondent	organizational processes	Manpower	Technology
organizational processes	1	5	0.2
Manpower	0.2	1	2
Technology	5	0.5	1
Total column	6.2	6.5	3.2

Source: Information obtained from survey

to the criteria and the most important criteria involved in the decision making process are examined. The third level is related to the options and discusses the elements among which are selected or are graded in order of priority. In this study, the first level i.e. the goal is ranking factors affecting the implementation and management of customer relationship. The second level is the criteria and the third level is options. The main factors include the organizational processes factor, human manpower factor and technology factors. In order to rank factors affecting customer relationship management performance, a questionnaire was designed and distributed among the study sample and the required information was collected. In this questionnaire the criteria for ranking factors affecting the implementation of Customer Relationship Management consisted of three main factors which were compared in pairs and then they were compared in pairs by each of the criteria (Table 8). Basic steps to analyze the AHP model based on a questionnaire are presented below and then based on the entire questionnaires the final analysis is provided. This process requires a high volume of space and computing, therefore as a sample and step by step, the main steps of prioritized strategies are described and merely the results extracted by the software will be presented. In order to prioritize the factors affecting customer relationship management implementation, first the criteria by which responders have separately weighted the effective factors should be prioritized.

After drawing the matrix, the digit one is filled in its diameter and to fill other arrays, according to the relative importance of each factor compared to other factors, the quantitative data are used to fill other arrays. Based on questionnaire data, the paired comparisons of the 3 indicators from the perspective of the first person is as below (Table 9).

After completing the matrix of primary paired comparisons from the perspective of each respondent, the above matrix is normalized (Table 10). To do this the numbers in each column of matrix are summed and the numbers of cells in each column are divided into the total number of that column.

Table 10: The normalized matrix

First respondent	Organizational processes	Manpower	Technology	Row mean
Organizational processes	0.16	0.77	0.06	0.33
Manpower	0.03	0.15	0.63	0.27
Technology	0.81	0.08	0.31	0.40

Information obtained from survey

Table 11: The vector for criteria weight from the perspective of the first respondents

First respondent	Weight of criteria (row mean)
Organizational processes	0.33
Manpower	0.27
Technology	0.40

Finally numbers in each row of the matrix are normalized and summed and its mean is obtained. The obtained matrix shows the comparison of significance between elements. The following vector (Table 11) shows the criteria priority (row mean) based on the comment of the first respondent.

Thus, the percentage of relative priority of each of the criterion is obtained from the perspective of the first respondents. From the perspective of the first respondents "technology" criteria is the most effective, and "manpower" has the lowest ranking. It should not be forgotten that these rankings, only reflects the comments of one of the 135 samples and as there are 135 different matrices to compare these three criteria, therefore AHP transforms these matrices into a single matrix (group AHP).

Ghodsi and Seyed (2006) Geometric mean is one of the best methods to combine paired comparisons tables of all respondents, because paired comparisons create data as "relation" and also an inverse matrix of comparison makes it more plausible to use this method; because the geometric mean preserves the inverse effect on paired comparisons matrix . If it is supposed that a_{ij} (k) is the component related to the Kth Company to compare the i criterion and j criterion, the geometric mean for the corresponding components is calculated by the following equation:

$$a_{ij} = (\overset{n}{\underset{k=1}{\bigcirc}} a_{ij}^{k})^{1/n}$$

Given that there are 135 respondents, a matrix is formed for each of the respondents in the AHP method and by geometric mean the total ranking and weighting of options are obtained from the perspective of all the ndividuals in the population. The final matrix (Table 12) is as follows.

So finally the following prioritization about the main factors is extracted: Thus, the percentage of the relative priority of each of the criteria is achieved from the perspective of respondents (Table 13).

Table 12: Paired comparison matrix of the main options from the perspective of the entire group before being normalized

All the respondents	Organizational processes	Manpower	Manpower
Organizational processes	1	6	6
Manpower	0.17	1	1
Technology	6	0.33	0.33
Total column	7.17	7.33	7.33

Table 13: The final matrix after being normalized

All the respondents	Organizational processes	Manpower	Technology	Row mea
Organizational processes	0.14	0.82	0.04	0.33
Manpower	0.02	0.14	0.72	0.29
Technology	0.84	0.05	0.24	0.37

Table 14: Weight vector of organizational processes indicators

Organizational processes	Row mean
Marketing	0.067
Services	0.084
Process Reengineering	0.129
Continuous assessment of performance	0.106
Readiness and maturity of organization	0.156
Customer-oriented strategy	0.323
Allocation of appropriate funding	0.055
Appropriate organizational culture	0.079

The "organizational processes" indicator is the most effective and lowest ranking belongs to "manpower". Below (Fig. 2) is a chart of the software output.

The model Inconsistency Ratio (IR) for the three main factors is calculated as 0.000 and as the calculated inconsistency ratio is much lower than 0.1, thus it can be concluded that the paired comparisons in the above matrix table has a good compatibility and the model is completely significant.

Prioritization of indicators related to organizational processes factors in line with the maturity of CRM: The most important indicators and components related to organizational processes factors in the field of CRM maturity include marketing (internal, external, micro, macro), services (design of services, appropriate implementation) re-engineering processes in marketing sector, sales and service and support , continuous assessment of performance, readiness and maturity of the organization to implement CRM, customer-oriented strategy (including customer satisfaction, customer value, customer maintenance, customer loyalty, customer support, focusing on key customers), allocation of appropriate funding, adequate corporate culture (customer orientation culture, accountability culture, change acceptance culture, matching culture). In the following table (Table 14), the final results of ranking factors related to organizational processes line with CRM maturity and the chart for software output is offered (Fig. 3):
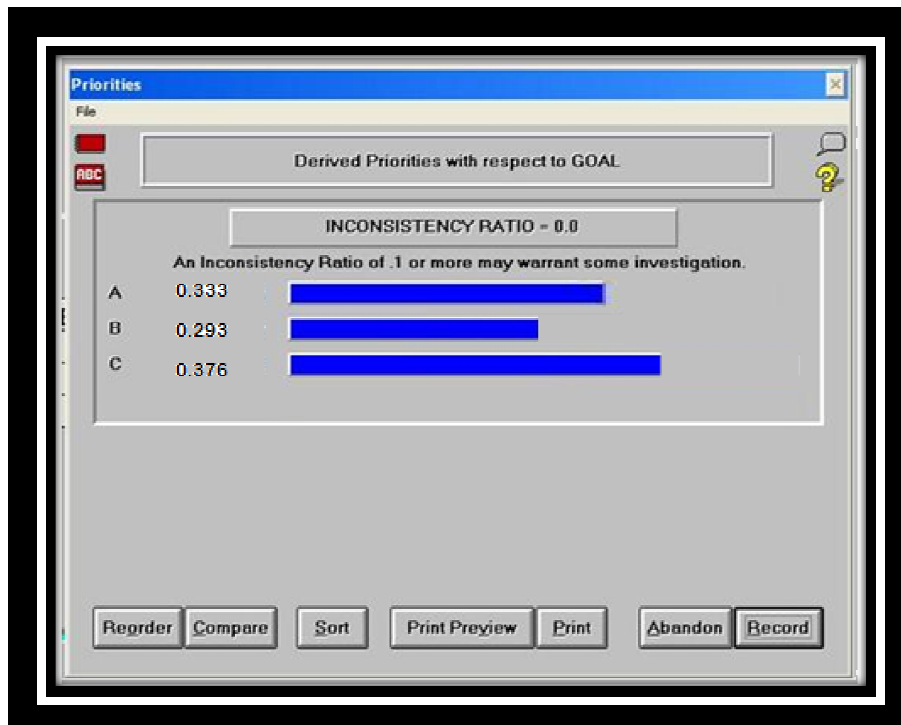
Fig. 2: Ranking the main factors affecting the performance of CRM (Expert choice software output)
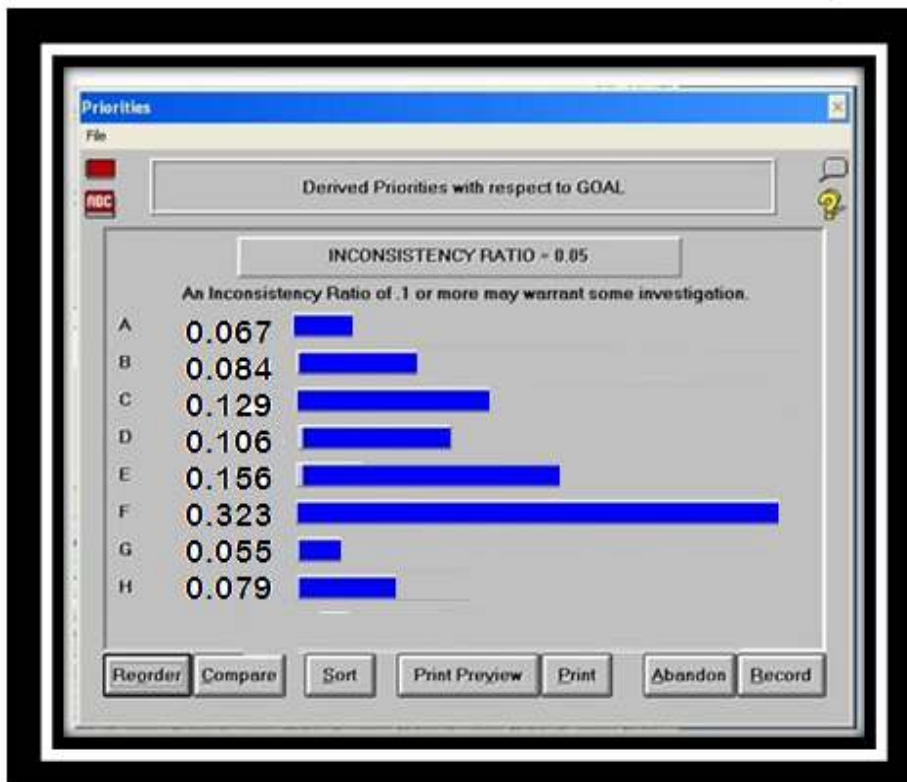

Fig. 3: Ranking of indicators related to organizational processes factor affecting CRM performance (Expert choice software output)

Table 15: Weight vector for manpower index

Manpower	Row mean
Readiness to change the culture of employees	0.034
Employee involvement	0.109
Effectiveness of reward systems	0.142
Employee empowerment	0.243
Employee training	0.194
Employee satisfaction	0.173
Characteristics of manager and leader of the organization	0.104

Table 16: Weight vector for technology indicators

Technology	Row mean
Information management systems	0.145
Performance software	0.072
Hardware infrastructure	0.105
Technological integration	0.12
Comprehensive database of customers	0.124
Store and maintain data of customers	0.243
Establishment of knowledge management	0.101

Inconsistency ratio is 0.05 and is much less than 0.1, thus it can be concluded that the results of model evaluation has good consistency.

Prioritization of indicators related to manpower factor: The most important indicators and components related to manpower factor (Table 15 and Fig . 4) in the field of CRM maturity are readiness to change the culture of employees, employee involvement, effectiveness of reward systems, employee empowerment, training, employee satisfaction, characteristics of manager and leader of the organization (leadership style, management experience, management expertise, management commitment).

Inconsistency ratio is 0.01 and is much less than 0.1 thus it can be concluded that the results of model evaluation has a good consistency.

Prioritization of indicators related to the technology factor: The most important indicators and components related to technology factor (Table 16 and Fig. 5) in the field of CRM maturity include information management systems, CRM performance software, CRM hardware infrastructure, technological integration of all sectors, comprehensive database of customers, store and maintain data of customers, establishment of knowledge management (including customer knowledge creation, customer knowledge share, customer knowledge utilization, customer knowledge maintenance, customer knowledge analysis, development of customer knowledge, review of customer knowledge, updates).

Inconsistency ratio is 0.01 and is much less than 0.1 thus it can be concluded that the results of the model evaluation has a good consistency.

The main hypothesis test: Given that the final results of the main options prioritization affecting CRM with
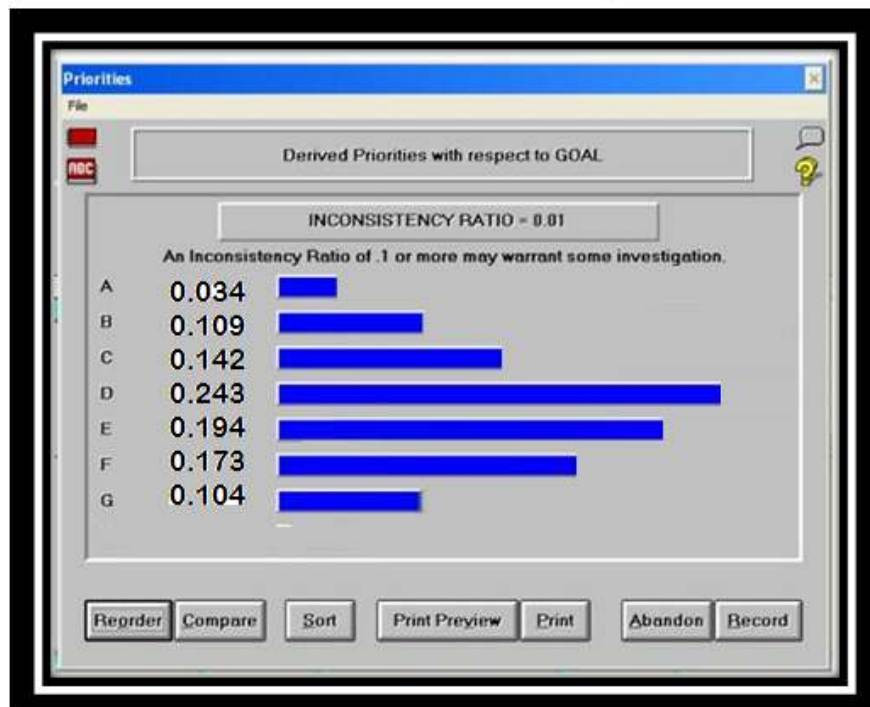

Fig. 4: Ranking of indicators related to manpower factor affecting the performance of CRM (Expert choice software output)
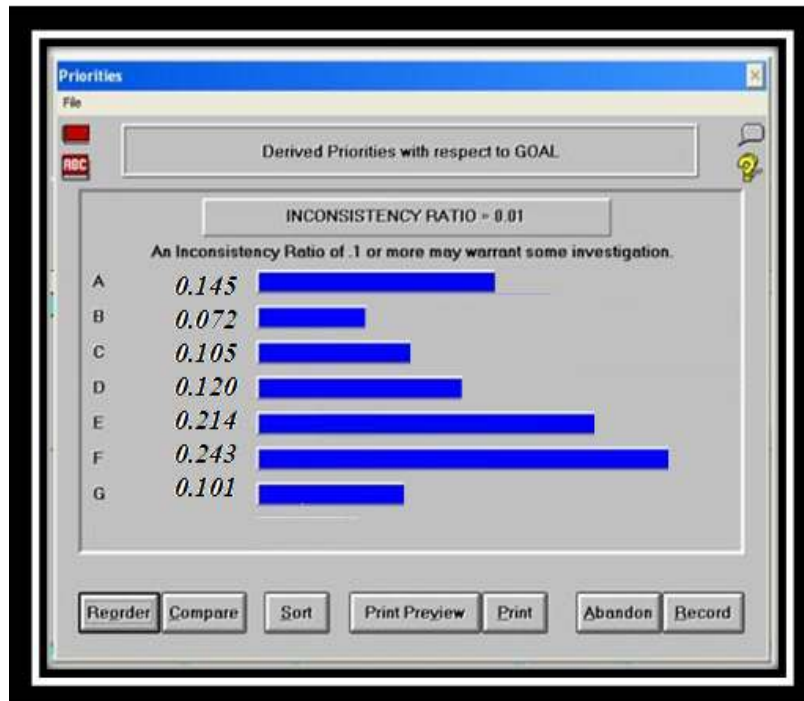
Fig. 5: Ranking index related to technology factors affecting the performance of CRM (Expert choice software output)

AHP method suggests the difference of importance coefficient of factors: organizational processes (0.33), manpower (0.29) and technology (0.37), therefore the main hypothesis of this research indicating the equality of importance of these factor in line with the maturity of the CRM, is not confirmed.

CONCLUSION

Table 1 shows the descriptive statistics related to the number (N), mean, standard deviation (Std. Deviation), maximum and minimum values of variables, Kurtosis and Skewness, separated for each variable. Normality test using Kolmogorov - Smirnov model is used to study the normality of variables (Table 2). T-student test for the main factors (Table 3) shows results to review each of the factors. T-student test for organization processes factor (Table 4) shows the confidence level of 95%, all of the organizational processes factors are effective in the customer relationship management performance. T-student test for human resources factor (Table 5) shows the confidence level of 95%, all of the human resources factors are effective in the customer relationship management performance. T-student test for the technology factor (Table 6) shows the confidence level of 95%, all of the technology factors are effective in the customer relationship management performance.

Binomial tests and comparison the ratio of the two groups did show in table 7. Paired comparison matrix to see people of different options makes Table 8. Table 9 shows a paired comparison from the perspective of each respondent. Table 11 shows the criteria priority (row mean) based on the comment of the first respondent. Table 12 shows paired comparison matrix of the main options from the perspective of the entire group before being normalized.

All figures are output of Expert Choice software. Figure 2-5 shows ranking the main factors affecting the performance of CRM, ranking of indicators related to organizational processes factor affecting CRM performance, ranking of indicators related to manpower factor affecting the performance of CRM, ranking index related to technology factors affecting the performance of CRM respectively.

Results of hierarchical analysis: Results of hierarchical analysis of key factors influencing the CRM implementation (Table 13 and Fig. 2) was obtained as follows: Technology Criterion (0.33) which allocated the most important influence, organizational processes in the second priority (0.37) and the lowest rate is for "human resources" (0.29). Also ranks of each of the three main factors index were identified as following.

Organizational processes: Results of hierarchical analysis of organizational process (Table 14 and Fig. 3) indicators were obtained as follows: the most important factor was customer-oriented strategy with the standard weight of 0.323 which was placed in the first priority and readiness and organizational maturity with 0.156, re-engineering of processes with 0.129, continuous assessment of performance with 0.106, service with 0.184, an appropriate organizational culture with 0.079, marketing with 0.067 and allocation of appropriate funding with 0.055 were respectively placed in the next priorities.

Manpower: Results of hierarchical analysis of manpower (Table 15 and Fig. 4) indicators were obtained as follows Results: the most important factor was empowering of employees with a standard weighted of 0.243 which was in the first priority, and teaching staff with 0.194, employee satisfaction with 0.173, efficiency of reward systems with 0.142, participation of employees 0.109, characteristics of organizational manager and leader with 0.104, readiness for change of employees' culture with 0.034 were respectively placed in the next priorities.

Technology: Results of hierarchical analysis of technology indicators (Table 16 and Fig. 5) were obtained as follows: the most important factor was save and maintenance of customers' data with the standard weight of 0.243 which was in the first priority, and comprehensive database of customer with 0.214, management of information systems with 0.145, technological integration with 0.120, hardware infrastructure with 0.105, implementation of knowledge management with 0.101, performance software with 0.072 were respectively placed in the next priorities.

The results of effectiveness of factors using t-student test: Effectiveness of the three main factors on CRM performance: P-value = 0.000 and values less than one percent of significance level showed that in the 99% of confidence level, all the three factors of organizational processes, human resources and technology are effective in performance of customers relationship management (Table 3).

Effectiveness of organizational processes factor indicators: P-value = 0.000 and values less than five percent of significance level showed that in the 95% of confidence level, each of the indicators of organizational processes factor are effective in performance of customers relationship management (Table 4).

Effectiveness of manpower factor: P-value = 0.000 and values less than one percent of significance level

showed that in the 99% of confidence level, each of the indicators of manpower factor are effective in performance of customers relationship management (Table 5).

Effectiveness of technology factor indicators: P-value = 0.000 and values less than one percent of significance level showed that in the 99% of confidence level, each of the indicators of technology factor are effective in performance of customers relationship management (Table 6).

Evaluation of organizational maturity in CRM implementation using binomial test: According to the binomial test and comparison ratio of the two groups in each of the indicators, it is inferred that except the index of information technology and knowledge management which is less than the given amount for CRM maturity (12.5), other indicators such as strategy, organizational processes, organizational culture, organizational individuals, and change management have reached to CRM maturity in baby accessories industry (Table 7).

Testing the research sub-hypotheses: According to the above information (that among the six CRM indicators, the organization has not reached maturity in two indicators), it is concluded that the research sub-hypothesis is rejected, and in other words the studied organization is not yet fully mature for CRM implementation.

SUGGESTIONS

Suggestions in relation to research results: In connection with the principles of customer relationship management the following recommendations can be offered for implementing a successful CRM strategy. According to the results of hierarchical analysis of key factors influencing the CRM implementation, it can be proposed that to implement CRM the organization must first strengthen technology, then organizational processes, and finally the processes appropriate to manpower.

Technology: according to the results of hierarchical analysis, the priority of technology indicators was save and maintenance of customers data, and then respectively were comprehensive database of customers, management of information systems, technology integration, hardware infrastructure, knowledge management implementation, and performance software. Thus it is recommended to start the implementation of customer relationship management these priorities will be considered.

Organizational processes: according to the results of hierarchical analysis of organizational processes indicators, customer-oriented strategy was recognized as the most important factor which should be the priority of organizational managers and then readiness and maturity of the organization, reengineering of processes, continuous evaluation of performance, service, appropriate organizational culture, marketing, and allocation of appropriate funding shall be considered.

Manpower: According to the results of hierarchical analysis, the first priority of manpower indicators was empowerment of employees and then respectively employee training, employee satisfaction, efficiency of reward systems, employee involvement, characteristics of manager and leader, readiness to change employee culture should be considered as priorities to implement CRM in the organization.

In order to implement an effective CRM strategy in competitive markets, according to the model presented in the article the company needs to form an expert team of technical and business skills, which will lead to establishment of high standards of customer services. The proposed phases for implementation of customer satisfaction and customer relationship management system are proposed as follows:

- **The first phase:** Basic studies, familiarity with the structure and general nature of company and preparation
- **The second phase:** Collecting, organizing and sorting information
- **The third phase:** Designing Customer Satisfaction Index (CSI) and measure the levels of customer satisfaction
- **The fourth phase:** Compilation of optimal customer orientation strategy and CRM
- **The fifth phase:** Design and produce management software for customer satisfaction
- **The sixth phase:** Assessment and monitoring after the implementation
- **The seventh phase:** Re-engineering business processes and activities taking into account the CRM strategy and producing specific customer relationship management software

Suggestions for other researchers: In this line for further research in the field of customer relationship management the following suggestions are proposed.

- Evaluation of customer relationship management in various industries and compare them with each other

- Relationship between CRM implementation and organizational profitability
- Use of new data mining tools in order to implement customer relationship management
- Prioritization of factors affecting customer relationship management using Fuzzy Topsis Process and comparing the results with findings in this research
- Identify and prioritize barriers for implementation of customer relationship management in the organization
- Study the relationship between customer relationship management and customer satisfaction
- Identification and ranking risk of customer relationship management
- Test the effectiveness of customer relationship management in the organization by comparing the profitability ratios before and after implementation of customer relationship management

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