

On the Investigation of Customer Relationship Management Competency and Social Media based on Multi-Criteria DEMATEL Technique (Case Study: Kaleh Company)

*Sanaz Abedzadeh Afrapoli**

Business Management, Higher Education Institution of Rahian Novin Danesh, Sari, Iran.

**Corresponding Author*

Davood Darvishi Salokolaei

Department of Mathematics, Payame Noor University, Tehran, Iran.

Ramezan Gholami

Department of Management, Payame Noor University, Tehran, Iran.

ABSTRACT

The purpose of this study was to identify a causal relationship between customer relationship management competencies and social media. The present study was applied and descriptive in nature. In this research, DEMATEL-based multi-criteria decision-making technique (causal relationships) was used to collect the data. The statistical population of this study consisted of experts at the Kaleh Company; these people include those who have been working for Kaleh Company and have a history of more than 10 years of experience. According to an analysis of the variable of customer relationship competency, it was made clear that the variables of competency and use of technology served as the causal factors and the customer-centered management system and customer relationship performance as effect factors, such that the most influenced factor in this regard is customer relationship performance with the variable performance being the most influential one.

Keywords: Customer Relationship Management, Social Media, DEMATEL Technique, Marketing.

Introduction

Today, the economic and business progress of countries relies on the development of the advertising industry in keeping with other industries as it leads to gaining a competitive advantage over other countries (Peltier et al., 2013). In recent years, such issues as the future of marketing, especially the fact that whether traditional marketing is suitable for the prevailing conditions of the present century or not, have received the attention of many researchers. Although there is an agreement over the application of the basic principle of marketing, i.e., meeting customers' needs, the current market environment has made it necessary to change the way principles are implemented as fundamental changes have been made compared to the 60s (Rezaei & Radfar, 2013). Warren Keegan, a marketing scholar, maintains that one can achieve a sustainable

competitive advantage only by concentrating resources on opportunities and creating value for customers, thereby garnering strong support for the continuation of organization's survival and gaining leadership in the realm of competition. The relationship-centered marketer seeks to establish relationships with target customers who will buy from him/her (the company) again in the future while encouraging others to do so. The best approach to preserve customers is to create abundant customer satisfaction and to pay attention to what constitutes value for him/her, so that his/her loyalty to the company is strengthened as a result. Customer relationship management also seeks to provide more value to the customer and to achieve tangible and intangible privileges arising from the relationship. In today's world, focusing attention on the principles of relationship marketing and customer relationship management is seen as a competitive advantage (Trainor et al., 2013).

Today, innovative methods, effective customer orientedness, effective technologies, service provision and customer service relations are key factors for the success of a company as they bring about a competitive market advantage. This will help the company absorb more resources and gain more productivity. This will also lead to the company's survival in the future. New organizations have turned to marketing approaches in social media to meet the expectations. Obviously, one can see a significant emphasis placed by a number of large companies in the country on various social media marketing dimensions (Tarokh et al., 2016). An important point to suggest in this regard is to pay attention to the advertising and in formativeness dimensions of these activities (Wang and Kim, 2018). In social media advertising, different audiences are intended and attention to them is critical for success. Recognizing internal and external groups (internal and external marketing) is of high importance in the marketing program. Focusing attention on the elements constituting the marketing setting, which has today gone out of its traditional form and expanded, will ensure the success of an advertising program (Wang and Kim, 2018). To be successful in marketing through social media, messages must be provided where the audience is present (Seo and Park, 2018). When a simple and clear message is repeated in many places and across the society, it is more likely to be seen and remembered. An expansion of channels used depends on the size of the program budget and the research results from the target group. As said, the present study seeks to recognize a causal relationship between customer relationship management competencies and social media at Kaleh Company.

Theoretical research foundations

- **Social media**

Social media is a tool designed for interaction and dissemination of content in the Internet environment through social interactions, has a very high accessibility rate and makes use of scalable dissemination techniques (Khaniki & Babaei, 2015). The enjoyment of these technologies serves as a paradigm shift in the human's individual and social life. Modern information technologies connect far corners across the world together in global networks and computer communications create a set of virtual communities, and as a result, transforming the material and spiritual contexts and processes surrounding human beings. In reality, social changes accelerate in proportion to the level of information and communication technologies societies enjoy and the role communications play among people. This is while information communications play a critical role in connecting people together across the globe. Therefore, it is not an exaggeration to suggest that there is a solid link between information and communication technology and the formation of social life (Castells, 2007).

Some communication scholars have argued that today the world is run by the one who controls the media. The major role of the media in forming the public opinion has led to an appreciation of the importance of the media. Today, social networks are the vanguards of the turbulent ocean of the Internet. Social media get engaged in marketing for each of its members in a smart way.

- **Social media components**

- ✓ **Presenting relevant content in social media**

Social movements think locally and have roots in their own society, but they act globally and encounter authorities who are present in the communication space and global power networks. The formation of self-selective communications has provided an impressive means for social movements and individual de-

constructionism against prevailing discourses and formal institutions. Naturally, social movements do not have an origin of technology, but they make use of technology. Technology is not a simple tool, rather it is itself a medium and a social construct with its own specific requirements. Besides, the development of self-selective communication technology expands a culture that emphasizes on individual independence and embodies the individual as a self-developed social activist. Under such a cultural and technological paradigm, social movements and new forms of political mobilization largely make use of self-selective means of communication, though seeking to influence public opinion in other ways (Khaniki and Babaei, 2015).

✓ **Updating content**

The benefits of modern technologies can be used for the rapid transfer of and updating of the information in the network memory in a large scale; these technologies can shape our lives in every respect.

✓ **Presenting popular content among friends**

The popularity of social media, software and content contexts among friends is another major important reason why customers get engaged in commercial brands in social media. In social networks, social media make use of sophisticated technologies which are able to intelligently provide people with the information they are interested in according to the history of searches and request of specific information, and also present advertisements to the user. This feature has brought about a change in social media so that the individual can quickly get to know about their favorite information without trying to find the favorite cases.

✓ **Advertising campaigns**

Many businesses have embraced the Internet as a new method of doing business in the new information era. As a facilitator of mass localization, the information revolution can reduce the gap between producer and consumer in the market and in the suitable market conditions. The Internet allows the companies to have faster access to customer needs, localization of products consistent with customer needs, faster testing, and shorter product life periods (Turban et al., 2002).

• **Customer relationship management**

Today, key customers are seen as a valuable asset and an important source of innovation to develop ideas over how to produce new goods and services that require much focus. Therefore, companies seek to apply a unique strategy to retain their current and loyal customers rather than gaining new customers that require more investment. Increased competition and reduced loyalty have led to the emergence of concepts with focus on developing customer relationships (Delawi, Kadkhodai, 2015).

Companies and institutions have focused their attention on attracting customer satisfaction to sell and to make more profit. as the competitive environment has expanded; with the traditional economy fading away and the competition becoming intense in new forms, customers have become a main pillar of all organizational activities. This indicates that from a competitive point of view, the survival and continuity of organizations relies on recognizing and attracting new customers and retaining the existing customers (Taherpour Kalantari and Taybi Toloo, 2015). If the customer relationship management system is designed well, it will lead to a complete and inclusive understanding of the customer. Customer relationship management allows firms to easily identify customers who are more beneficial and make more marketing efforts on customers who buy from the company. This also leads to better understanding of the current customer, allowing the company to greatly increase customer retention rates by interacting, responding and communicating effectively with them (Amiri, 2013).

Customer relationship management is made of three main parts: customer, relationship, management; by the customer, it is meant an end consumer who has a supporting role in value-creating relationships. By relations, it is creating more beneficial and loyal customers through learning communications and by management, it is denoted the creativity and leadership of a customer-oriented business process and placing the customer at the heart of the organization's processes and experiences in today's organizations. Customer relationship management has received a strategic importance under difficult competition conditions.

Customer relationship management is a strategy that helps the company develop long-term relationships with customers and increase its profits through a strategy focusing on the customer and the right management system. Today, Internet influence has dramatically changed situations. For this, the Internet is appropriate for integrating applied programs for customer relationship management. This has led to the emergence of e-customer relationship management.

Researches demonstrate that there is a lot of profit from using electronic customer relationship management, because it has significantly helped the flow of information in the organization and customer relations (Yaghoubi, Del Afrooz, 2013).

Table 1: Objectives of customer relationship management (Hadizadeh Moghadam et al., 2013)

Researcher	Objectives
Barent	<ol style="list-style-type: none"> 1. Saving customer data collection-incurred costs 2. Increasing revenue from recognizing customers 3. Strategic effects
Novel	<ol style="list-style-type: none"> 1- Recognizing specific values of each group of customers 2. Understanding the relative importance of those needs for each customer group 3. Determining whether providing such values is appropriate for each customer in the way they desire. 4. Measuring the results and confirming the return on investment
Swift	<ol style="list-style-type: none"> 1. Improving the process of relationships with real customers 2. Providing the right products to each customer 3. Providing the right products to each customer through the right channels 4. Providing the right products to each customer at the right time
Galbreath and Rogers	<ol style="list-style-type: none"> 1- Customization 2- Creating personalized communications (dedicated to each customer). 3. Providing post-sales support services
Kalacuta and Robinson	<ol style="list-style-type: none"> 1. Increasing profitability by identifying, attracting and preserving the best customers 2. Using customer data to provide better services to their needs 3. Introducing repeated and compatible processes and methods

It allows customers to manage their relationships with suppliers more than any other method, although this method may make retaining customers more difficult (quoted by Hadizadeh Moghadam et al., 2013). The hefty investment made by economic firms on customer relationship management shows a high risk from executing this plan. For example, reports by Gartner indicate a low success rate from executing the project. However, major applications of customer relationship management in various fields, especially the service sector, are undeniable. Considering the high importance of implementing customer relationship management in the banking industry requires creating an appropriate mechanism to improve its performance (Hassan Gholipour et al., 2015).

Customer relationship management in organizations has been raised as an innovative project which takes a high priority in service organizations. Today, organizations have realized that they can no longer produce as in the past and incline the customers to consume products. In the process of gradual development, it is necessary to pay attention to the needs and potential and actual interests of customers for success. Improving the potential of customer relationship management and removing existing uncertainties about the way it is implemented in organizations have created a new attitude to factors affecting the company's decision to make use of the CRM strategy. Based on a review of the literature on the concepts and principles of customer relationship management, one can argue that customers, employees, leadership, organizational culture, strategy and structure are the main factors required to implement CRM (Abbasi and Turkmen, 2015).

Table 2: Research background

Row	Researcher	Year	Subject of research	Research findings
-----	------------	------	---------------------	-------------------

1	Azami et al.	2018	Investigating the Impact of Perceived Social Media-related Marketing Activities on Consumer Purchasing Intent	The results from testing research hypothesis demonstrate that perceived social media marketing activities have a positive and significant effect on consumer purchasing intention.
2	Tabasi Lotfabadi and Naseri	2017	Investigating the Impact of Customer Relationship Capacities and the Use of Social Media on Company Efficiency (Case study: Irancell)	The results indicated that applying social customer relationship management (including customer-centric variables, use of social media technology, customer interaction plans, communication information processes and social customer relationship management competencies) has a positive and significant impact on customer relationship performance. The results also suggested that communication information processes did not affect social customer relationship management competencies.
3	Harirri and Shahvar	2010	Improving the Satisfaction of Library Users by Using the Customer Relationship Management System	The research including the use of a qualitative approach was seen a descriptive case study with complementary data collected from dissatisfaction factors and strategies to increase satisfaction through group focused interviews through group focus interviews with the most dissatisfied library users. In the third stage, the findings from the two aforementioned stages led to the provision of solutions to improve user satisfaction and designing of a proposal for customer relationship management system in the central library as necessary information was provided. This system, via personalization of library members, has the potential to provide the required services for the users.
4	Hadizadeh Moghadam et al.	2013	Providing a Successful Model for Executing Customer Relationship Management	The current situation of the bank was investigated in terms of effective factors and Friedman test was applied to prioritize the importance of factors over each other. The findings from the present study indicated that all the factors were identified as effective factors on the success of customer relationship management; the factor of the people at the organization was found to have the highest impact on the success of implementing the customer relationship management. Also, in the current situation of the bank, the factors of knowledge management, organization, and communication management were found not to be in a good position, and also from the managers' point of view, communication management was relatively more important.
5	Wang and Kim	2018	Investigating the Role of Sales-based CRM Technique and the Use of Social Media in Post-sales Service Behaviors in India	Despite the ever-increasing understanding of the vital role of post-sales service in relation to sales and customer, few studies have investigated the behavior of service salesperson (SSB) behaviors through such tools as customer relationship management and social media. Using vendor-to-vendor data in a business environment, this study began to analyze the direct effects of sales-based CRM technique on hardware behavior behaviors, information communication, motivation, empathy, and exercise.
6	Jossiasen et al.	2014	Customer Relationship Management and Creating an Environment for it and CRM Dimensions on Company Efficiency	In general, hotels' goal of improving customer relationship management competencies is because they believe it has a positive impact on their efficiency. Contrary to some previous assumptions, investment on customer relationship management does not result in positive performance in essence. This finding is critical in the hotel's efforts to allocate resources to strengthen customer relations.

Research method

The present study was applied and descriptive in nature. In this research, a multi-criteria decision-making technique was used to gather the data. The priorities were selected by determining the DEMATEL technique (causal relations). In this method, the evaluated questionnaires are first scored with points from zero to four and scored. Experts are then surveyed and asked to rate the factors, as the minimum score (minimum discrepancy) equals zero and the maximum discrepancy (highest score) is four. The data required for this research was collected based on a review of the literature and the theoretical discussions of the subject, as well as referring to libraries, journals, specialized publications and websites, etc. Also, the needed data were acquired by providing the sample subjects with a matrix questionnaire. More data were also collected via face-to-face interviews. To evaluate the validity of the questionnaire, experts' opinions were taken, and after applying their opinion and eliminating the shortcomings, the validity of the instrument

was achieved. Incompatibility rate is used to appraise the reliability of this style of questionnaire. The statistical population of this study consisted of expert people at the Kaleh Company; these people include those who have been working for Kaleh Company and have more than 10 years of experience and are also involved in decision making processes. Because the DEMATEL technique is used, experts are needed to select and determine the statistical sample of the research according to the small statistical population.

To analyze the data in this research in line with the DEMATEL technique, Excel and Expert Choice software are used. Thus, first the experts are asked to score zero to 4 to the questionnaires and then the general initial matrix is obtained by geometric averaging method; then in the next steps, the causal relationships matrix between the variables is used to measure the reference matrix. Finally, the causal relationships matrix and the extent of their impact and effectiveness will be obtained. This method is summarized in 5 steps and presented as follows:

Step 1: Providing a direct relationship matrix

In this section, a five-level comparison scale is required. These four scales used to describe the relationship between the factors are: 0 (ineffective), 1 (low impact), 2 (moderate impact), 3 (high impact) and 4 (very high impact), respectively. The next step includes obtaining the experts' opinion concerning pairwise comparisons and recording of the results. The result of this step is represented by the symbol Z with its components represented by Z_{ij} . Each member of Z represents the degree of influence the criterion i has over the criterion j .

Step 2: Normalizing the direct relationship matrix

Through formulas (1) and (2), the direct relationship matrix Z can be converted to a normal direct relationship matrix.

$$X = s \cdot Z \quad (1)$$

$$s = \min\{1/\max_{1 \leq i \leq n} \sum_{j=1}^n z_{ij}, 1/\max_{1 \leq j \leq n} \sum_{i=1}^n z_{ij}\}, \quad i, j = 1, 2, \dots, n \quad (2)$$

Step 3: Forming a general relationship matrix

When the matrix M , i.e., the normalized matrix of the direct relationship matrix, is calculated, the total relationship matrix is calculated using Equation (3), which is the same matrix.

$$T = M(I - M)^{-1} \quad (3)$$

Step 4: Determining the threshold effect and providing a causal diagram

The sum of the elements in the rows and columns of the matrix are named r and j vectors, respectively, calculated using equations 4 to 6. The value of j_i indicates the direct and indirect effects of factor i th on other factors. As well, the value of r_i represents the total effects of other factors on factor i .

The value of the horizontal axis of the diagram is called the "Axis of significance" indicating the degree of importance the relevant criterion has, and is calculated by the sum of the vectors r and j , $(R + J)$. As well, the vertical axis of the diagram, called the "Axis of dependency", is calculated by the relation $(R - J)$. With this axis, we will be able to divide the criteria into two groups, i.e., cause and effect. In sum, when $(R - J)$ is positive, the relevant criterion belongs to the cause group and otherwise, the relevant criterion belongs to the effect group. Hence, the causal diagram is provided by drawing points with coordinates $(R + J, R - J)$ presenting valuable information for future decisions.

$$T = [t_{ij}]_{n \times n}, \quad i, j = 1, 2, \dots, n \quad (4)$$

$$R = [\sum_{j=1}^n t_{ij}]_{n \times 1} = [r_i]_{n \times 1} \quad (5)$$

$$J = [\sum_{i=1}^n t_{ij}]_{1 \times n} = [t_j]_{n \times 1} \quad (6)$$

Step 5: Creating an internal dependency matrix:

At this stage, the sum of the numbers in each row is converted to one, using the normalization method, and thus the resulting matrix is the internal dependency matrix.

Findings

- **Identification of components based on various research (coding)**

This stage of the research recognizes the components and questions based on various researches on customer relationship management and social media marketing; this is while, finally after reviewing and concluding the research results (taking notes), components were determined. Also, according to the face-to-face interview, the experts were asked to provide their opinion on customer relationship management, as the work continued using identified codes. The table below illustrates the identified components used in this study.

Table 3: Identification of research components

Row	Factors	Reference
1	Income and profitability	Hassan et al., 2015
2	Return	Judges et al., 2016
3	Reducing internal costs	Hakan et al., 2015
4	Productivity	Hakan et al., 2015
5	Seizing the opportunity	Das and Mishra, 2018
6	Investment	Judges et al., 2016
7	Relations management	Das and Mishra, 2018
8	Customer satisfaction	Das and Mishra, 2018
9	Content management	Verhoeven, 2003
10	Accurate management	Verhoeven, 2003
11	Customer retention	Judges et al., 2016
12	Understanding customer needs	Refiki, 2010
13	Product development systems	Refiki, 2010
14	Discourse facilitation systems	Verhoeven, 2003
15	Sales systems	Das and Mishra, 2018
16	Relationship management systems	Hassan et al., 2015
17	Community formation systems	Hakan et al., 2015
18	Distributed classification systems	Refiki, 2010
19	knowledge management	Hassan et al., 2015
20	Electronic markets	Refiki, 2010
21	Applications	Refiki, 2010
22	Stakeholders' interaction	Verhoeven, 2003
23	planning	Das and Mishra, 2018
24	Invest in communication	Hassan et al., 2015

Based on the distribution of identified factors, experts were asked to score their opinion on each of the scores from one to five. In case the subject would receive score 3.7, the category could be made. It turned out that this category is as follows:

- Customer Relationship Management: Production, Dissemination, Accountability
- Use of technology, customer-oriented management system, capabilities of technology use, customer relationship performance

- **Analysis of causal relations**

In the present study, a 0-4 scored matrix questionnaire is needed to use the DEMATEL technique. Two different questionnaires were used to analyze the present study which analyzes the causal relationship.

Therefore, the analysis is divided into two parts, the first part of which relates to customer relationship management competencies, which includes three variables of production, dissemination and accountability, and explains the causal relationships of these cases. In the second part, a general analysis of the research is performed, which includes the variables of technology use, customer-oriented management system, use competencies and customer relationship performance. In the following, the interpretations are discussed.

- ✓ **Analysis of competencies related to customer relationship management**

The following table illustrates the questionnaire and the classification related to customer relationship management; in fact, this table is a raw customer relationship management questionnaire.

Table 4: Geometric Mean of Customer Relationship Management Questionnaire

	Production	Dissemination	Accountability
Production	0	3	1
Dissemination	1	0	3
Accountability	4	3	0

Based on the scores provided by the experts to this questionnaire, the geometric mean obtained is seen in Table 4-5. In the next step, M matrix is calculated which is provided in Table (5).

Table 5: M Matrix

M	Production	Dissemination	Accountability
Production	0	0.428571	0.142857
Dissemination	0.142857	0	0.428571
Accountability	0.571429	0.428571	0

To calculate the M value, the sum of rows is first calculated using Table (5) and then the maximum of this sum is specified, with each and every data is divided by the value of the maximum, as the rate of the output is seen as M matrix or reference.

Table 6: I-M matrix

I-M	Production	Dissemination	Accountability
Production	1	-0.42857	-0.14286
Dissemination	-0.14286	1	-0.42857
Accountability	-0.57143	-0.42857	1

In this section, the value obtained in Table (6) is then subtracted from matrix I (i), the value of which is seen in Table 4-6.

Table 7: Matrix (I-M) ^ - 1

(I-M) ⁻¹	Production	Dissemination	Accountability	R (sum Line)
Production	1.458333	0.875	0.583333	2.91666667
Dissemination	0.692708	1.640625	0.802083	3.13541667
Accountability	1.130208	1.203125	1.677083	4.01041667

J (sum Column)	3.28125	3.71875	3.0625	
----------------	---------	---------	--------	--

In this step, in order to positiveize the matrix taken from Table (7), it is powered by negative one, which is also known as transposition.

Table 8: General relationship matrix

$M(I-M)^{-1}$	Production	Dissemination	Accountability
$(I-M)^{-1}$	0.458333	0.875	0.583333
Production	0.692708	0.640625	0.802083
Dissemination	1.130208	1.203125	0.677083

In this step, the value in Table (8) is multiplied by the values in Table (5) and the value obtained suggests the general relationships between the variables. In the next step, the causal relations between the customer relationship competencies are explained. For this, there is a need to understand and calculate the threshold, the value of which is obtained by calculating the average of Table (8); in here, the threshold value is 0.78742.

Table 9: Explaining the causal relationships between variables

T	Production	Dissemination	Accountability
Production	0	1	0
Dissemination	0	0	1
Accountability	1	1	0

In this section, the values are calculated in terms of zero and one, so that, if the values in Table (8) are greater than the threshold value, being equal to 0.78742, the value is one, otherwise, the value is zero. In terms of threshold value, the relationships between the variables are specified in Figure (1).

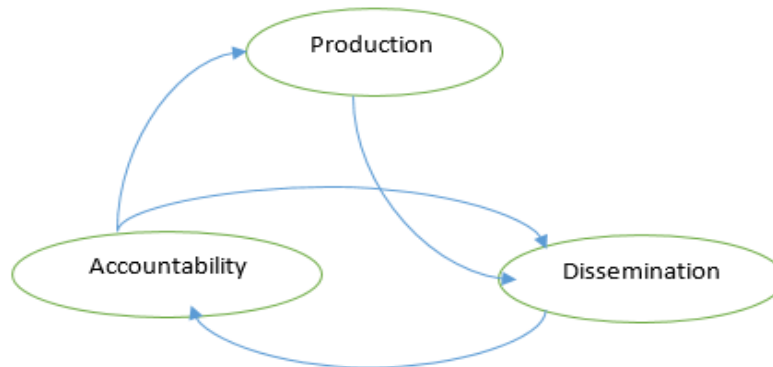


Figure 1: Causal relationships of customer relationship competency variables

According to the diagram and table above, the relationship path between the variables has been specified such that the relationship path has a customer relationship capability.

Table 10: Superiority vector and relationship vector

	Production	Dissemination	Accountability
R+J Superiority vector	6.197917	6.854167	7.072917
R-J Relationship vector	-0.36458	-0.58333	0.947917

According to Table (7), the value of R, J is calculated, which is the sum of each row in Table (7) as R and the sum of each column in the said table is known as J.

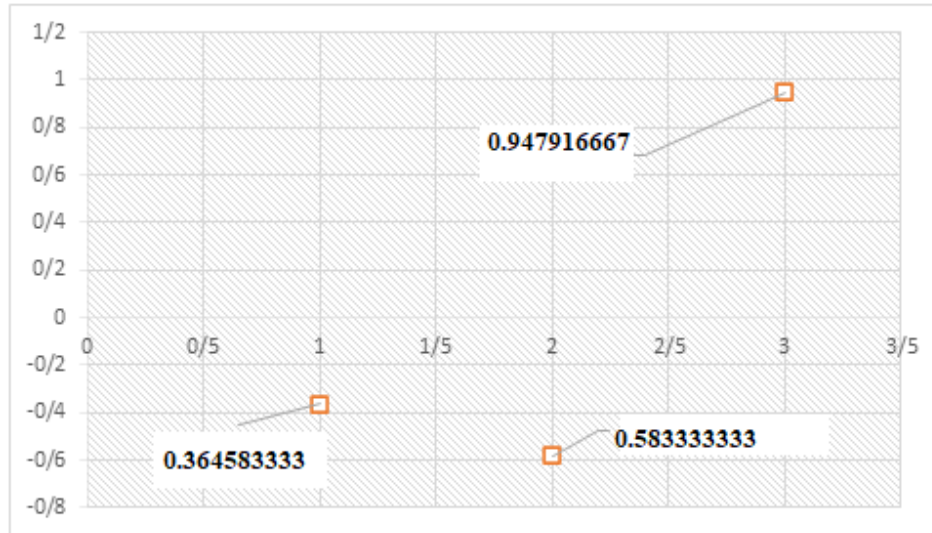


Figure 2: Impact diagram

By performing the R-J operation, the effect of each factor on a set of other factors is calculated. In case of positive value, it is indicative of the variable being effective and is recognized as a causal factor, while being negative it is suggestive of the variable being under influence and an effect. In these three variables, accountability serves as a causal factor while dissemination and production as affect factors, with dissemination being the most influential.

✓ **Final analysis**

Using the collected data and raw data, the values obtained from the distributed questionnaires will be used to meet the objectives of the research. Based on this, the questionnaires first remove the raw data and then various statistical software for analysis is used. The following table illustrates the questionnaire and the classification; in fact, this is the final raw questionnaire table.

Table 11: Geometric mean of the final questionnaire

	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
Use of technology	0	3	3	1
Customer-oriented management system	3	0	4	2
Competency	3	2	0	1
Customer relationship performance	3	2	2	0

Based on the scores provided by the experts to this questionnaire, the results of the geometric mean are presented in Table (11). In the next step, matrix M is calculated as it is seen in Table (4).

Table 12: M matrix

M	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
Use of technology	0	0.333333333	0.333333333	0.111111111
Customer-oriented management system	0.333333333	0	0.444444444	0.222222222
Competency	0.333333333	0.222222222	0	0.111111111
Customer relationship performance	0.333333333	0.222222222	0.222222222	0

To calculate the M value, use the table (12) is first used to calculate the sum of rows and then maximum of this sum is specified, where each and every one of the data is divided by the maximum value, as the output is recognized as the M matrix.

Table 13: I-M matrix

I-M	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
Use of technology	1	-0.333333333	-0.333333333	-0.111111111
Customer-oriented management system	-0.333333333	1	-0.444444444	-0.222222222
Competency	-0.333333333	-0.222222222	1	-0.111111111
Customer relationship performance	-0.333333333	-0.222222222	-0.222222222	1

In this section, the value obtained for table (13) is then subtracted from matrix I, the value of which is seen in table (6).

Table 14: Matrix (I-M) ^ - 1

(I-M)⁻¹	Use of technology	Customer-oriented management system	Competency	Customer relationship performance	R (sum line)
Use of technology	1.985343856	1.0789177	1.275084555	0.602029312	4.941375
Customer-oriented management system	1.430665163	1.988726043	1.532130778	0.77113867	5.722661
Competency	1.116121759	0.91319053	1.89740699	0.537767756	4.464487
Customer relationship performance	1.227733935	1.004509583	1.187147689	1.491544532	4.910936
J (sum Column)	5.759864713	4.985343856	5.891770011	3.402480271	

In this step, in order to positiveize the matrix obtained from Table (14), it is powered by negative one, which is also known as transposition.

Table 15: General relationship matrix

M(I-M)⁻¹	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
Use of technology	0.985343856	1.0789177	1.275084555	0.602029312
Customer-oriented management system	1.430665163	0.988726043	1.532130778	0.77113867
Competency	1.116121759	0.91319053	0.89740699	0.537767756
Customer relationship performance	1.227733935	1.004509583	1.187147689	0.491544532

In this step, the value of Table (13) is multiplied by Table (15) and the value obtained suggests the general relationships between the variables. In the next step, the causal relations between the research variables are explained. For this, we need to recognize and calculate the threshold. The value of the threshold value is calculated by estimating the average of Table (8). In this section, the threshold value equals 1.00247.

Table 16: Explaining the causal relationships between variables

T	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
Use of technology	0	1	1	0
Customer-oriented management system	1	0	1	0
Competency	1	0	0	0
Customer relationship performance	1	1	1	0

In this section, the values are calculated in terms of zero and one, so that, if the values in Table (16) are greater than the threshold value, being equal to 1.00247, the value is one, otherwise, the value is zero. In terms of threshold value, the relationships between the variables are specified in Figure (3).

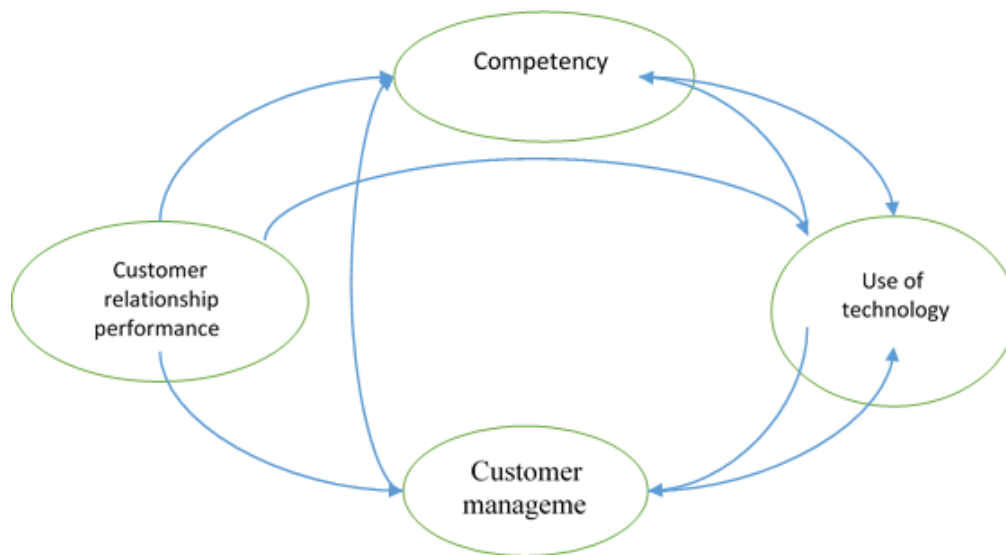


Figure 3: Causal relationships of variables

According to the chart and table above, the relationship between the variables has been determined, what kind of relationship the research variables have and from which variable they are related to which variable.

Table 17: Superiority vector and relationship vector

	Use of technology	Customer-oriented management system	Competency	Customer relationship performance
R+J Superiority vector	10.70124014	10.70800451	10.35625705	7.866967306
R-J Relationship vector	0.81848929	-0.737316798	1.427282976	-1.508455468

According to Table (8), the value of R, J is calculated, which is the sum of each row in Table (17) as R and the sum of each column of the table is known as J.

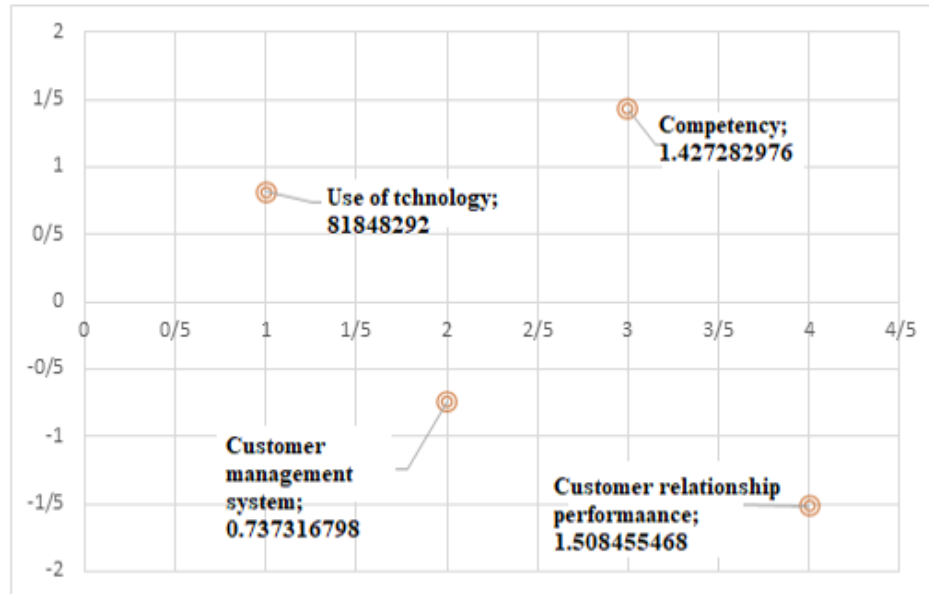


Figure 4: Effect diagram of research variables

By performing the R-J operation, the effect of each factor on a set of other factors is calculated. In case of positive value, it is indicative of the variable being effective and is recognized as a causal factor, while being negative it is suggestive of the variable being under influence and an effect. In these four variables, use of technology and competency serve as a causal factor while customer management system and customer relation performance as effect factors, with competency being the most influential.

Conclusion

This study aimed to identify the causal relationship between customer relationship management competencies and social media at Kaleh Company. To analyze the causal relationship, the DEMATEL technique was applied; in this connection, based on the analysis performed for the variables of customer relationship competencies, it was determined that by performing the R-J operation, the effect of each factor on a set of other factors is calculated. In case of positive value, it is indicative of the variable being effective and is recognized as a causal factor, while being negative it is suggestive of the variable being under influence and an effect. To analyze the causal relationship, the main analysis of all research variables was carried out, based on which the variables of use of technology and competency serve as a causal factor while customer management system and customer relation performance as effect factors, with competency being the most influential. In their short lifespan, social technologies were able to attract the attention of their audiences much faster than previous versions of digital technology. According to the results, electronic customer relationship management tools can help sales representatives and marketing managers recognize the expectations and needs of the customer. Therefore, companies must make use of technologies that can transfer customer information to sale representatives. This information helps prepare sale firms to make the information before the customer contacts them. Electronic customer relationship management, in addition to affecting purchasing engagement, can help recognize customer history and identify the products they need.

The research portrays an image of an online customer who makes uses of social media technology to get engaged in business processes. Using the social media in dairy companies can be an important form of interaction. Because in such companies, end customers tend to use social media to create their own brand affiliation. In the traditional marketing system in the dairy-meat industry, the traditional distribution system is applied, i.e., brokers are used to get engaged with the end customers. The very traditional marketing system is still prevalent in today's markets. In the concept of modern marketing, special attention is paid to

the quality of long-term relationships between the company and its partners, including customers, sales agents, financial intermediaries, employees, etc. Based on the analysis, and to strengthen using social media technology, it is recommended that organizations design business processes to focus on customer needs. In the organization, employees are encouraged based on measuring customer satisfaction. The key criterion to appraise employees' contact with the customer is the quality of their customer relationship. As well, in the organization, various functional divisions coordinate their activities to improve the quality of customer experience.

References

- [1] Abbasi, M.R. & Turkmani, M. (2015). Theoretical model of implementing customer relationship management (CRM). *Monthly Business Reviews*, 8(41), pp. 19-34
- [2] Amiri, Y. (2013). Investigating the quality of customer relationship management services and formulating the optimal CRM in the banking system using the TOPSIS technique (Case study: Tejarat Bank of Shiraz). *Quarterly Journal of Industrial Management*, Faculty of Humanities, Islamic Azad University, Sanandaj Branch, Fourth Year, No. 10, pp. 43-56
- [3] Azami, M.; Azadi, V. & Ayneh, M., (2018). The effect of perceived social media marketing activities on consumer purchasing intent, *Sociology of Education Quarterly*, 7(7), pp. 181-197.
- [4] Capilanou. (2010). www.capilanou.ca/help/login-page/active-cms/glossary.html
- [5] Castells, M. (2007). "Communication, Power and Counter-power in the Network Society". *International Journal of Communication*, 1, 2007, pp. 238266-.
- [6] Delawi, M.R. & Kadkhodai, M. (2015). Investigating the Relationship between Applying Marketing Metrics from the Perspective of Innovation and the Achievement of Customer Relationship Management Goal Based on Gartner's Model in Sepah Bank, Isfahan. *Journal of Marketing Management*, 17.
- [7] Hadizadeh Moghadam, A.; Haj Moghani, R. & Ramin Mehr, H. (2013). Providing a successful model for implementing Customer Relationship Management (CRM). *Customer Relationship Management Conference*, Tehran, pp. 1-20.
- [8] Hariri, T. & Shahvar, Sh. (2010). Improving the satisfaction of library users using the customer relationship management system, *Book Quarterly*, 83.
- [9] Hassan Gholipour, T.; Seyed Javadin, Seyed R.; Rousta, AD.; & Khanlari, A. (2015). Customer relationship management process evaluation model in private commercial banks. *Information Technology Management Monthly*, 4(10)
- [10] Josiassen, A., Assaf, A., George, K., & Ljubica, C. (2014). CRM and the bottom line: Do all CRM dimensions affect firm performance? *International Journal Hospitality Management*, 36, pp130-136.
- [11] Khodakarami, Farnoosh & Chan, Yolande E. (2014). Exploring the role of customer relationship management (CRM) systems in customer knowledge creation, *Journal of Information & Management*, 51(1), PP. 27–32.
- [12] Khaniki, H. & Babaei, M. (2015). Cyberspace and social networks concept. *Functions*, Quarterly Journal of the Iranian Association for Information Society Studies, 1(1).
- [13] Peltier, W., Zahay, D. & Lehmann, D.R. (2013). Organizational learning and CRM success: a model for linking organizational practices, customer data quality, and performance. *Journal of Interactive Marketing*. 27, pp. 1–13.
- [14] Rezaei Malek, N. & Radfar, R. (2013). A Model for Prioritizing Knowledge Management Factors to Improve Customer Relationship Management Performance (Case Study: Sepah Bank). *Information Technology Management Monthly*, 5(3)
- [15] Seo, E., Park, J.W. (2018). A study on the effects of social media marketing activities on brand equity and customer response in the airline industry, <https://doi.org/10.1016/j.jairtraman.2018.09.014>
- [16] Trainor, K., et al, (2013), Social media technology usage and customer relationship performance: A capabilities-based examination of social CRM, <http://dx.doi.org/10.1016/j.jbusres.2013.05.002>
- [17] Turban, E., Mclean, E., & Wetherbr, J. (2002). *Information Technology for management: Making Connections for Strategic Advantage*. 2nd, New York, Wiley.
- [18] Taherpour Kalantari, H. & Taybi Toloo, A. (2015). Relationship between customer relationship management (CRM) and performance. *Business Management Perspectives Magazine*. 1, pp. 109-122
- [19] Tabasi Lotfabadi, V. & Naseri, A. (2017). Investigating the Impact of Customer Relationship Competencies and the Use of Social Media on Company Efficiency (Case Study of Irancell), *National Conference on New Research in Behavioral Sciences and Social Cultural Studies*, Mashhad, Sanabad Golbahar Higher Education Institute.
- [20] Tarokh, M.J., Yazdani Qard, M. & Mehraban, H. (2016). *Customer Relationship Management*. Khajeh Nasir University Press, first edition.
- [21] Yaghoubi, D. & Del Afrooz, N. (2013). Analysis of the results from the implementing the Electronic Customer Relationship Management System (Case Study of Bank Saderat, Tehran Province), *Bank of Iran Marketing Articles*.
- [22] Wang, Z. Kim, G.H. (2018). Can Social Media Marketing Improve Customer Relationship Capabilities and Firm Performance? Dynamic Capability Perspective, <https://doi.org/10.1016/j.intmar.2017.02.004>.