Int. J. Nonlinear Anal. Appl. 15 (2024) 12, 271–284
ISSN: 2008-6822 (electronic)
http://dx.doi.org/10.22075/ijnaa.2023.31856.4725

Providing a model of the marketing strategy in the electricity industry using a multi-criteria decision-making approach in a fuzzy environment

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(Communicated by Mohammad Bagher Ghaemi)

Abstract

The main goal of this research is to present a model of Marketing Strategy in the Electricity Industry. Therefore, the current research focuses on the electricity industry and the customers and special markets of this industry and seeks to formulate a marketing strategy in the form of a conceptual model. The present research has used mixed methodology (qualitative and quantitative) to collect and analyze its data. In the qualitative part, to collect research data, a semi-structured interview and the opinions of 11 marketing, advertising and sales experts in the electricity industry and related industries were used, and these opinions were analyzed based on the grounded theory method in the Max Kyuda software. The output of the qualitative part includes the identification of dimensions and components related to the four areas of developing a marketing strategy in the electricity industry of the country. In addition, to identify the structure of relationships and weigh the dimensions and components of the model, a quantitative approach and decision-making methods with multiple criteria were used in a fuzzy environment. Based on the final results obtained, the positioning dimension was identified as the most important and key dimension in the field of developing a marketing strategy in the electricity industry of the country, which means the need to focus on the local shaping elements identified for this dimension in the processes of formulating and explaining marketing strategies in the electricity industry of the country.

Keywords: electricity industry, marketing strategy, mixed approach
2020 MSC: 90B60

1 Introduction

In the present research, the researcher is to provide a model of the marketing strategy in the electricity industry. The electricity industry is an industrial branch, which covers the generation, transmission, distribution and sale of electric power to the general public and industry. This industry has been owned and controlled by the government for many years. Nowadays, it experiences new opportunities with the presence of the private sector and competition in an

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Received: July 2023 *Accepted:* October 2023

emerging market. With the development of the transfer of industries to the private sector, the electricity industry of our country has begun some changes in the organizational structure and created independent and non-governmental companies to distribute electricity and manage electricity production since the 1970s. It has also established companies in the executive and contracting sectors, construction and equipment, services, consulting, auditing, computer and billing, repair and maintenance of electrical networks and facilities, etc. many of which (except production and distribution ones) have been assigned to the private sector through the stock exchange or auction during last years. In addition to the above, the Generation and Transmission Company of Iran "TAVANIR" has planned its executive activities in various domains over the past few years to achieve the goals of the Law on the Implementation of General Policies related to Article 44 of the Constitution, to create the necessary platform to build a healthy competitive market mechanism, to consider the principle of protecting the rights of producers and consumers and to develop the culture and motivation needed for helping the private sector enter the electricity market with adequate trust. In these conditions, the electricity industry has changed from a stagnant and state-owned industry to a dynamic, competitive one, which now has opportunities to gain advantages. Moreover, considering the galloping speed of the progress and high growth of this industry, various and numerous investors have turned their attention to it. The result is the high level of competition in the electricity industry and the high need of the companies involved for business strategies and specifically effective marketing strategies to align internal resources with environmental conditions and characteristics. The development of privatization in this industry adds to the importance of this issue. Thus, the present study is to provide a model of the marketing strategy in the country's electricity industry, considering the current conditions of this industry and its possible future.

To present this model, the researcher uses a four-step marketing strategy model introduced by Kotler and Armstrong [1]. This model has 4 steps including market segmenting, targeting, positioning and differentiating. Since there is no other study on the marketing strategy in the electricity industry, especially in a market such as Iran's, the present study will identify the effective and key dimensions related to each step in this industry in the country. Here the dimensions and components related to the four steps of developing a marketing strategy based on the content analysis approach are reviewed and analyzed. This approach is used to extract specific approaches of the electricity industry in these four steps. Moreover, the researcher provides a systematic literature review on marketing strategies at the global level based on the grounded theory approach (data-based theory). Then, he transforms qualitative data collected from electricity industry experts to identify the dimensions and components of the four steps of marketing strategy formulation into a theoretical platform to develop theories in the area of strategy in the marketing sector in industries such as electricity. In fact, one of the most important goals of this study is to build platforms necessary for providing new theories in the marketing strategy in the electricity industry and other industries related to it. This goal can be realized using grounded theory. In addition, according to the studies, for example, those done by Dangelico and Vocalelli [5], there is a linear relationship between the four steps of the marketing strategy. In particular, two steps of segmenting and targeting, on one hand, and two steps of positioning and differentiating, on the other hand, have significant correlations with each other.

In this regard, the researcher investigates various methods of dealing with the existing interactions between these four steps using multi-criteria decision making approach (MCDM) and, especially, Fuzzy DEMATEL method in an attempt to examine if there is a network structure among them or not. In other words, apart from the existing linear relationship, he tries first to understand what effects the possible non-linear and network of these steps have on each other and second to identify the most important step among the four steps of marketing strategy development and the weight, importance and priority of the dimensions related to them based on the Fuzzy ANP. In this case, the researcher suggests that the methods such as Fuzzy DEMATEL and Fuzzy ANP should be used. According to what told about the goals of this study, it can be expected that the outputs of this research in the country's electricity industry provide a comprehensive model for the strategic management of the country's marketing activities on one hand, and comprehensive information about the quality and quantity of relationships among the different steps of strategy formulation and the priorities of strategy arrangement, on the other hand. It means that the companies involved in the electricity industry can equip their business model with a flexible marketing strategy model, identify functional priorities to gain competitive advantages from their competitive environment and adapt themselves with them. In general, the present study can be considered as an attempt to provide a comprehensive model to develop a marketing strategy in the electricity industry and the degree of agreement of the managers and experts of this industry with its operational components and dimensions. Thus these two questions will be answered: What is the relationship structure between the dimensions of the marketing strategy in the country's electricity industry (based on the STPD marketing strategy model)? What is the prioritization of methods and approaches related to the dimensions of the marketing strategy in the country's electricity industry (based on the STPD marketing strategy model)?

2 Literature review

In theoretical perspective, many studies have emphasized that effective formulation and implementation of marketing strategy, especially in highly competitive environments is of potential desirable results for companies and organizations. A review on the literature in this case shows that marketing strategy has significant effects on the general performance of an organization [11], strengthening the role of marketing capabilities in the development of organizational performance [3], developing brand equity and improving brand image in view of the customers and stakeholders [8] as well as gaining satisfactory competitive advantages [13]. Considering these key results, providing frameworks in order to formulate the marketing strategies, especially in markets where such frameworks are not observed, can promote the situation of that industry. In this regard, the present study is focused on the country's electricity industry and its special conditions and requirements while trying to provide a comprehensive marketing strategy model to improve the conditions of this industry.

What adds to the importance of the present study is the lack of domestic and foreign studies on the marketing strategies model in the electricity industry and its related industries and the high need of companies in this industry to use various strategic models in the marketing sector in business development processes. The model used here is based on the well-known marketing strategy model of Kotler and Armstrong [1]. It also is determined the structure of relationships between the steps of their model, along with prioritizing the approaches related to each step. In this way, this model can be a proper guideline for the strategic decisions of companies in the electricity industry sector in order to formulate and implement marketing activities. The necessity to do such a study is the lack of similar studies and the negative consequences of ignoring a systematic approaches and the importance of coordination and alignment between the organization's marketing resources and capabilities and the conditions of the market; a goal that effective marketing strategy and related models seek to realize. Thus, this study is important to do because of the role which this model and other similar models play in creating a systematic order in the marketing activities of companies in the electricity industry, reducing the wastage of organizational capital in this regard and achieving its goals in a more proper manner.

Formulating effective marketing strategies in the electricity industry- whose customers are organizations and companies and where B2B relationships are built- is of great importance. In this case, the studies have shown that the marketing strategy based on the realities of an industry and arising from the requirements and needs of industrial customers can strongly increase customer loyalty, create value for customers and develop satisfactory relationships between the transaction parties. It is true especially when the continuous changes in the behavioral patterns of customers and competitors in the energy production industry have necessitated updating and adopting flexible strategic approaches in the energy marketing sector as one of the most necessary activities [14]. Thus, providing a model in the marketing strategy in the electricity industry is very essential for success of the business of companies in this industry. Taking in to account the creation and development of the electricity market and electricity retailing in the country and the creation of a competitive environment in this industry between producers and suppliers of electrical energy [10], a great amount of development can be seen in this industry which, in turn, has led to its high dynamics in our country. Being present in the market and interacting with private and sometimes government customers in the area of energy sales by producers and suppliers has led to the creation of a competitive environment. This case has added to the importance of the effective and dynamic marketing strategies. Thus, another reason for the importance of this study is providing a model in parallel with the conditions, factors and characteristics of the country's electricity industry (intra-industry and environmental factors besides contextual and macro ones) to formulate the marketing strategy of companies. Formulating and prioritizing the marketing strategies of Bazargostar Pegah company and that of dairy companies based on customer satisfaction in Tabriz city were identified by interviews and questionnaires completed by dairy products customers in 2014. For this purpose, DEMATEL-ANP-TOPSIS mixed method was used to prioritize seven dairy companies in Tabriz.

The results obtained from the research done by Esfandiari and Esfidani [6] on formulation of inter-company marketing strategies for the National Iranian Oil Products Distribution Company in the bunkering industry showed that supply chain management is the most common used strategy to achieve the goals of the fifth development plan and accelerate the growth of the bunkering industry. Considering the results of Esmaili and Majidi [7] on developing a marketing strategy based on the G-STIC framework (G-STIC) in Fars Rizan Materials Company, the holistic positioning strategy comes first by priority. The strategy of stealing the share of competitors based on differentiation comes second. The results obtained from the Mohammadi and Sani Heydari's research [9] on the effective factors on the choice of marketing strategy for food industry products in the stages of growth and product introduction show that the groups of marketing strategies are not possible to combine. In addition, Hausman confirms this claim that the three groups of marketing strategies are independent from each other.

A study done by Olson et al. [11] came to this conclusion that implementation of the human resource management

policies for mid-level marketing managers has significant effects on the effective formulation and implementation of marketing strategies. Moreover, the alignment between marketing strategies and business strategies has significant effects compared to the case where there is no such an alignment. According to the results of the study done by Dangelico and Vocalelli [5] on the analysis of the steps of green marketing strategy based on a systematic review of thematic literature, the marketing strategy has four different steps, including segmenting, targeting, positioning and differentiating. The same study analyzed the characteristics of each of these four steps using the green marketing strategy. In their study on the relationship between marketing capabilities and company performance and the moderating roles of market orientation, marketing strategy and organizational power, Cacciolatti and Lee's study [3] showed that marketing capabilities have a significant effect on the company performance and three variables of market orientation, marketing strategy and organizational power are the moderators in this relationship. Therefore, the company's marketing strategy can be considered as one of the effective factors on the company's performance. In their study, Bang et al. [2] proposed a conceptual framework in the marketing strategy in emerging markets. This conceptual model identified four strategic options for marketing in an emerging market. They concluded that the marketers should choose an optimal combination of strategies instead of suggesting a general marketing strategy. The results obtained from a study done by Toaldo et al. [12] indicated that there is a positive, significant relationship among innovative organizational culture, marketing strategy process and organizational performance. Nevertheless, innovative organizational culture has no direct effect on the organizational performance.

3 Methodology

This is a mixed research because it collects data using qualitative and quantitative methods. The method is exploratory mixed. Its exploratory method is based on the use of the primary data. It is an applied research in terms of purpose- both developmental and practical. It is also a descriptive-survey research in terms of nature. The research in qualitative and quantitative phases based on the opinions of the participants and the interview and questionnaire tools is to find the truth. Thus, this research can be classified as a survey study. In terms of time span, it is cross-sectional and data gathering is done using field techniques. The approaches used are semi-structured interviews and standard questionnaires.

The statistical population for qualitative research data collection consists of senior managers and specialists and experts in the marketing department of the country's electricity industry in Tehran. The statistical sample of the research included 11 experts because the researcher used the opinions of 11 experts to use them in the qualitative section of the research. In the quantitative phase of the research, Fuzzy ANP and Fuzzy DEMATEL questionnaires were used asking about the opinions of 11 selected experts in the qualitative phase (the first phase of the research). As told, the statistical population consists of senior managers and specialists and experts in the marketing department of the country's electricity industry in Tehran. For this aim, purposive sampling was used. In the qualitative phase, 11 experts were selected whose opinions were used in the quantitative phase as well.

In this research, data gathering was done using the interview tool (semi-structured) in the qualitative section. All findings and how to interpret and analyze them have been documented, recorded and reported at each stage. In addition, three experts were selected as reference experts to supervise the done analyses and the obtained results. Reliability evaluation of the interview protocol was determined using the percentage agreement between two coders:

$$\text{Percentage agreement of intercoders} = \frac{\text{number of the agreed codes} \times 2}{\text{the total number of the codes}} \times 100 \tag{3.1}$$

The results of this research have been summarized in the table below according to which, the reliability coefficient for the interview protocol is equal to 0.67. Since the minimum acceptable level for the reliability coefficient is 0.6 (60%), 0.75 is considered a to be desirable.

Table 1: evaluation of the reliability between two coders

Raw	Interview no.	The total numbers of codes (first and second coders)	Agreed codes	Reliability
1	First	69	22	0.61
2	Fifth	106	39	0.74
3	Tenth	81	25	0.62
	Total	256	86	0.67

The participants expressed their opinions upon the questions about the elements and structures that shape the dimensions of the marketing strategy in the country's electricity industry (based on the STPD model) as a central

phenomenon along with background and intervening and causal factors, strategies and consequences related to this central phenomenon so as to form a paradigmatic model. these opinions were presented in the form of a qualitative interview, using the theory coding approach based on the grounded theory methodology (identification of open codes, categories and concepts). Then they were analyzed using MAXQDA software in order to establish the foundations of the research model in the area of the elements which form the paradigm model of marketing strategy in the industry.

In this research, a standard questionnaire tool was used in quantitative section with the aim of data gathering. **The standard questionnaire for Fuzzy DEMATEL**: this questionnaire was used to collect data about the direct effects of the four dimensions of marketing strategy and those of the components of each dimension on each other. **The standard questionnaire for Fuzzy ANP**: it includes pairwise comparisons based on the network structure of the relationships identified by the Fuzzy DEMATEL method.

In this questionnaire, the elements in each component based on the elements present in the effective component are paired with each other in order of their importance. Such paired comparisons, their aggregation and the analysis of the aggregated matrix resulted in the relative importance weights of the component. In return, these weights entered the unbalanced super matrix. In this study, multi-criteria decision making approaches (MCDM) (Fuzzy DEMATEL and Fuzzy ANP) were used in order to identify the relationship structure between the four dimensions of marketing strategy and the importance weights of research components. In the Fuzzy ANP method, the consistency index for pairwise comparison tables is calculated as follows:

All ANP calculations are done based on the decision maker's initial judgment which appears as a matrix of paired comparisons. Any error and inconsistency in comparing and determining the importance of items and indicators distorts the result of the calculations. The consistency ratio is a tool for recognizing the consistency of judgments and shows how much the priorities resulting from the comparisons are trusted. Experience has shown that the consistency ratio less than 0.1 means the consistency of the comparisons is acceptable. Otherwise, the comparisons should be repeated. The following steps are used to calculate the consistency ratio:

1. Weighted Sum Vector (WSV): Multiply the matrix of pairwise comparisons by the column vector of relative weights. The new vector obtained by this method is called the weighted sum vector
2. Consistency Vector (CV): Divide the elements of the weighted sum vector by the relative priority vector. The resulting vector is called consistency vector.
3. Calculation of $\lambda_{\max}$: it is used for calculating the average elements of consistency vector $\lambda_{\max}$
4. Consistency Index (CI): it is defined as:
$$CI = \frac{\lambda_{\max} - n}{n-1} \tag{3.2}$$
where n is the total numbers of items in the problem.
5. Consistency Ratio: it is obtained by dividing the compatibility index by the random index:
$$CR = \frac{CI}{RI} \tag{3.3}$$

A consistency ratio of 0.1 or less indicates consistency in comparisons. The random index is extracted from Table 2.

Table 2: random index

n	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
RI	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.51

However, for fuzzy numbers, we take that if $\tilde{R} = [\tilde{r}_{ij}]$ is a is a matrix of fuzzy pairwise comparisons with triangular fuzzy numbers $\tilde{r}_{ij} = (l_{ij}, m_{ij}, u_{ij})$ the matrix $R = [m_{ij}]$ is formed, which is the non-fuzzy matrix corresponding to the middle limit of the fuzzy numbers in the above matrix. If R is consistent, $\tilde{R}$ is also consistent as well.

The first step is designing fuzzy linguistic criteria: In this step, criteria for decision making should be determined. To resolve the uncertainty, these criteria should be available to the decision-maker based on the linguistic criteria so that the perspectives of the balanced scorecard can be compared according to these linguistic variables. Here, the criteria proposed by Chang and Lee [4] have been used.

The second step is making a respondent survey: in this step, each respondent should determine the intensity of the direct effect of each perspective on the other based on the four perspectives of the balanced scorecard. The third

Table 3: verbal scales for paired comparisons

Verbal values	Verbal phrases
(0.75,1,1)	Very high impact
(0.5,0.75,1)	High impact
(0.25,0.5,0.75)	Low impact
(0,0.25,0.5)	Very low impact
(0,0,0.25)	No impact

step is constructing the intensity matrix of the direct relationship (primary decision matrix $\tilde{O}$). The fourth step is normalizing the direct effect intensity matrix. For this aim, these formulas are used:

$$\tilde{Z}_{ij} = \frac{\tilde{O}_{ij}}{r} = \left(\frac{l_{ij}}{r}, \frac{m_{ij}}{r}, \frac{u_{ij}}{r}\right) \tag{3.4}$$

and

$$r = \max_{1\leq i\leq n} \left(\sum_{j=1}^{n} u_{ij}\right). \tag{3.5}$$

The fifth step is obtaining the intensity matrix of the total-relation Fuzzy Matrix $\tilde{V}$ This matrix is calculated for each fuzzy limit using the following formulas:

$$l''_{ij} = \tilde{z}_l \times (I - \tilde{z}_l)^{-1} \tag{3.6}$$

$$m''_{ij} = \tilde{z}_m \times (I - \tilde{z}_m)^{-1} \tag{3.7}$$

$$u''_{ij} = \tilde{u}_l \times (I - \tilde{z}_u)^{-1} \tag{3.8}$$

Finally, we combine each of the lower, middle and upper limits of these triangular numbers to form the corresponding matrix. The sixth step is dephasing where the fuzzy numbers of the matrix $\tilde{V}$ are dephasing. For this aim, the following simple formula is used:

$$V = \frac{a + 2b + c}{4} \tag{3.9}$$

The seventh step is determining the threshold: The threshold limit is used to eliminate less effective criteria in the model. In Fuzzy DEMATEL model, a common threshold limit is determined for all entries. Then, the entries with numbers higher than the threshold limit are entered in U matrix. Zero is entered instead of the entries with numbers less than the threshold limit. In this study, the arithmetic mean of the collection of data is used. Once the threshold in the new matrix U is determined (map of the intensity of the final relations), the following process is implemented:

$$\begin{cases} u_{ij} = v_{ij}, & v_{ij} \geq Ts \\ u_{ij} = 0, & \text{else} \end{cases} \tag{3.10}$$

Fuzzy ANP is a more comprehensive approach in decision-making, which is the generalization of the hierarchical analysis process method. It means that it is a hierarchical structure based on the dependence and feedback. In the rest, the steps of this method are presented. The first step is pairwise comparisons: it included performing pairwise comparisons between the indicators of the interdependent perspectives obtained from Fuzzy DEMATEL and calculation of the relative weights using the developmental analysis techniques by experts. As table 3 shows, it is only based on the external dependencies. The following approach is used to integrate the subjective preferences of experts, If $\tilde{r}_{ij} = (l_{ij}, m_{ij}, u_{ij})$ is a triangular fuzzy number and the summation of the opinions of k experts, then we have:

$$m_{ij} = \sqrt[k]{\prod_{k=1}^{k} m_{ij}^k} \tag{3.11}$$

where $(l_{ij}^k, m_{ij}^k, u_{ij}^k)$ is kth expert's judgment about the relative importance of two criteria C_i and C_j

The second step is placing the weights obtained in the super matrix and forming the unweighted super matrix W.

The third step is normalizing the unbalanced super matrix and obtaining the balanced super matrix: normalization is carried out to extract the balanced super matrix and it converts the unbalanced super matrix into a matrix with columns having a sum of one. In the traditional method, it is achieved by dividing the sum of each column by each member of that column in the unbalanced matrix.

The fourth step is calculating general preferences using limiting super matrix. Here, to converging the importance weights is achieved by raising the balanced super matrix to the power. The obtained matrix is called the limit matrix from which the weights of the indicators can be extracted. In this study, step forth is performed using SuperDecision Software.

4 Findings

Firs, the elements that shape the central phenomenon of the research were identified, that is, the marketing strategy in the electricity industry of the country was formulated according to the STPD model. Then, other structures that shape the paradigm model were identified, including causal, background and intervening factors. According to the categories and concepts identified in the 5 dimensions of the paradigm model, The model is as follows. It is notable that only categories are given in the model. Table 4 shows the analytical outputs related to open, central and selected codes of the research in the second qualitative section.

Table 4: an abbreviation of the analytical steps

Step	**Type of coding**	**Output**
Step 1	Open	identifying 94 features and indicators in the form of open codes and converting them into 33 subcategories
Step 2	Axial	Allocating 33 subcategories to six general categories based on grounded theory
Step 3	selective	Determining the relationship between six dimensions to develop a strategy in the electricity industry of the country

4.1 Identification of the network or causal structure between the dimensions of marketing strategy

In this section, DEMATEL approach is used in order to identify the network or causal structure between the dimensions of the marketing strategy in the electricity industry so that a deeper understanding of the extent of the internal dependencies of the factors can be achieved. The experts' opinions are summed up once they are determined. It is done by extracting a simple average from the opinions of all the respondents. Then, after summarizing the opinions, the intensity matrix of direct relationships is normalized. In this case, first, the sum of the upper limits is calculated for each row, and then the largest number is divided by all the entries of the matrix. Once the normalized matrix is obtained, the intensity matrix of the general fuzzy relation is determined. In fact, the elements of this matrix show the intensity of the general direct and indirect relationships of the elements to each other. The next step is dephasing the intensity matrix of general relationships.

Based on the calculation formulas, the optimal values are calculated for each of the upper, middle and lower limits. Then, these three matrices are integrated to obtain the intensity matrix of the initial fuzzy relationships. As told, the above matrix is changed into a non-fuzzy one in the next step. Now, the desired threshold limit is extracted using the simple averaging. The results of this threshold selection are shown in Table 5. As it can be seen from the table, zero cells indicate the intensity of relationships smaller than the threshold. In this way, the causal relationships between the four general dimensions of the marketing strategy are identified. In addition, the quantitative values of the intensity of the dimensions are also determined. The market segmenting is identified as the most effective dimension and positioning as the most effected dimension.

Table 5: general relationships intensity matrix

TRM	**Targeting**	**Segmenting**	**Positioning**	**Differentiating**	**D**
Targeting	0	1.312019	1.375052	1.338841	4.025911
Segmenting	1.372034	0	1.453315	1.451292	4.276642
Positioning	1.32268	0	0	1.359069	2.681749
Differentiating	0	1.334129	1.462763	0	2.796892
R	2.694714	2.646149	4.29113	4.149202	

The structure of relationships between four research dimensions can be determined based on this matrix. In this regard, these relationships based on non-zero values are drawn in the intensity matrix of general effect.

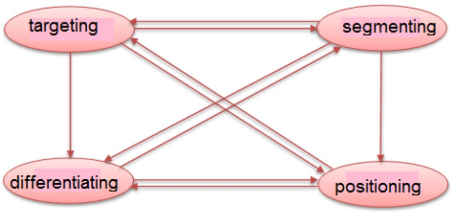

Figure 1: The network structure of interactive effects between the four dimensions of research

4.2 Identification of the importance weights of research components

The network relationships structure is introduced in Figure 1 after being identified in the previous step using Fuzzy DEMATEL method. Based on this structure, the external relationships network between the four dimensions of the marketing strategy in the country's electricity industry are determined. The ANP standard questionnaire is build based on this structure. In this study, the experts' opinions are collected by asking the question about the importance of one index compared to another one and the relative weights of the performance evaluation indices are extracted by forming matrices of paired comparisons and Excel and SuperDecision software.

According to the arrows drawn between the dimensions showing the effects of the dimensions on each other, all the elements in the effected dimension should be compared in pairs based on all the elements in the effective dimension. Thus, their relative importance weights should be determined and placed in the unbalanced super matrix. As it can be seen, according to the arrows in the network structure, the matrices of pairwise comparisons are formed. In the rest, some of these matrices are shown. One more point is that the matrix shown is the matrix of the aggregation of experts' opinions in a form of a matrix.

Table 6: Aggregated pairwise comparison matrix of the five elements of market segmenting with the first targeting index (resource allocation)

Resource allocation	**Factors related to the customers**	**Segmenting criteria**	**Segmenting criteria**	**Political-government factors**	**Data gathering and data analyzing**
Factors related to the customers					
Segmenting criteria	(1, 2, 3)				
Time factors	(0.33, 0.5, 1)	(0.33, 0.5, 1)			
Political-government factors	(0.47, 0.62, 1)	(0.69, 1.25, 2.08)	(0.33, 0.5, 1)		
Collecting and analyzing information	(0.60, 0.91, 1.58)	(0.47, 0.79, 1.44)	(0.69, 1.25, 2.0844)	(0.69, 0.79, 1)	

According to the implementation of the steps of Chang's method in Excel software, the output of the above aggregated pairwise comparison matrix is as follows. In this case, the resulting output includes the importance weights of five market segmenting dimension indicators regarding the resource allocation factor from the market-targeting dimension.

Table 7: importance weights of components

Components	**Normal weights**
Factors related to the customers	0.263
Segmenting criteria	0.285
Time factors	0.224
Political-government factors	0.212
Collecting and analyzing information	0.015

It is notable that these weights enter the unbalanced super matrix. Another example is that the aggregated matrix of experts' opinions in the pairwise comparisons between six positioning elements are introduced based on the effectiveness of the first index of market segmenting, that is, customer-related factors.

According to the implementation of the steps of Chang's method in Excel software, the output of the above aggregated pairwise comparison matrix is as follows. In this case, the resulting output consists of the importance weights of four indicators of production and service development dimensions based on the influence of the environmental risk management index.

In this way, the relative importance weights of the indicators are determined and entered the unbalanced super

Table 8: The matrix of aggregated pairwise comparisons of the six market positioning elements with the first segmentation index (customer related factors)

Factors related to the customers	Development of capabilities	Improvement of the brand image	Environmental measures	Special approaches	Trust building	Acquisition of the Continuous information
Development of capabilities						
Improvement of the brand image	(1, 1.58, 2.08)					
Environmental measures	(0.33, 0.5, 1)	(0.69, 1, 1.44)				
Special approaches	(1, 1, 1)	(0.47, 0.79, 1.44)	(0.69, 1.25, 2.08)			
Trust building	(0.69, 1, 1.44)	(0.87, 1.44, 2.28)	(1, 1.25, 1.44)	(0.69, 1, 1.44)		
Acquisition of the Continuous information	(1.25, 1.44, 1.58)	(1.25, 1.81, 2.28)	(1.25, 2.28, 3.30)	(1.25, 1.81, 2.28)	(0.33, 0.5, 1)	

Table 9: importance weights of components

Components	Normal weights
Development of capabilities	0.161
Improvement of the brand image	0.159
Environmental measures	0.113
Special approaches	0.144
Trust building	0.199
Acquisition Of the Continuous information	0.222

matrix based on pairwise comparison matrices and using Chang's method in Excel software. This naming is because in this macro matrix the sum of the row elements is more than one. The rest of the network analysis process is done using SuperDecisions software in such a way that the importance weights identified by Chang's method are entered into SuperDecisions software in Excel software and its output consists of unbalanced super matrix. Table 10 shows a part of the unbalanced super matrix of the present study, which is obtained from the SuperDecisions software.

Table 10: a part of the unbalanced super matrix

Main Network: zare.sdmod: ratings: Unweighted Super Matrix

Clusters	Nodes	di1	di2	di3	di4	di5	di6	di7	di8	po1	po2	po3	po4	po5	po6	se1	se2	se3	se4	se5	ta1	ta2	t
differentiating	di1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.180790	0.113734	0.113057	0.112645	0.128677	0.137569	0.127938	0.126869	0.125650	0.161609	0.118955	0.112645	0.140240	0
	di2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.186193	0.144243	0.134967	0.168968	0.159996	0.137969	0.183555	0.189094	0.175170	0.152485	0.138780	0.195478	0.167067	0
	di3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.144072	0.124037	0.091446	0.114646	0.112167	0.127164	0.115435	0.102353	0.110944	0.109279	0.108241	0.099940	0.159359	0
	di4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.164782	0.172352	0.190595	0.174670	0.165299	0.161881	0.147044	0.148307	0.163766	0.156882	0.159908	0.159764	0.124324	0
	di5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.030015	0.161148	0.174687	0.135654	0.162497	0.164382	0.169751	0.185246	0.173169	0.183927	0.167217	0.173469	0.124124	0
	di6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.186693	0.065820	0.059630	0.062425	0.050030	0.106153	0.054216	0.013962	0.052421	0.021768	0.010514	0.148860	0.100100	0
	di7	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.054827	0.166950	0.182791	0.178972	0.162698	0.061731	0.149545	0.017370	0.050420	0.202067	0.196255	0.052421	0.103203	0
	di8	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.052626	0.051716	0.052826	0.052021	0.058635	0.103152	0.052516	0.216799	0.148459	0.011983	0.100130	0.057423	0.081582	0
positioning	po1	0.152130	0.163549	0.201440	0.166333	0.191477	0.196359	0.182955	0.194519	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.169868	0.228770	0.208081	0.237748	0.161735	0.084517	0.133327	0
	po2	0.159632	0.152946	0.199640	0.158532	0.181773	0.190557	0.194758	0.191019	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.156863	0.201806	0.208741	0.167534	0.159736	0.151930	0.189238	0
	po3	0.132727	0.151045	0.192639	0.144829	0.167867	0.178454	0.180354	0.167017	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.206683	0.138970	0.190054	0.166833	0.113255	0.183737	0.142428	0
	po4	0.133427	0.160048	0.194339	0.166033	0.225590	0.211964	0.237471	0.217222	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.177271	0.215593	0.211709	0.185237	0.143942	0.163233	0.180036	0
	po5	0.189638	0.182255	0.210242	0.175335	0.002801	0.010603	0.200060	0.226223	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.277811	0.189361	0.169059	0.103321	0.199020	0.193639	0.163133	0
	po6	0.232447	0.190157	0.001700	0.188938	0.230492	0.212064	0.004401	0.004000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.011505	0.025500	0.012355	0.139328	0.222311	0.222945	0.191838	0
segmentation	se1	0.115209	0.111658	0.180761	0.208583	0.277024	0.134127	0.187654	0.181785	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.212685	0.182837	0
	se2	0.227336	0.196204	0.364052	0.240871	0.242384	0.195237	0.245982	0.211143	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.188976	0.207341	0
	se3	0.298310	0.234461	0.101052	0.194038	0.120148	0.166207	0.128096	0.292765	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.185074	0.173135	0
	se4	0.180119	0.256853	0.151629	0.150196	0.170637	0.307617	0.249196	0.181785	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.196879	0.186837	0
	se5	0.179026	0.200823	0.202306	0.206313	0.189807	0.196812	0.189072	0.132521	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.216387	0.249850	0
targeting	ta1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.110022	0.185585	0.110217	0.169535	0.146611	0.142010	0.171454	0.154431	0.197010	0.129039	0.175075	0.000000	0.000000	0
	ta2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.139714	0.115592	0.129306	0.124434	0.133650	0.149614	0.158443	0.151930	0.155343	0.114234	0.128929	0.000000	0.000000	0
	ta3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.108947	0.147048	0.145806	0.145115	0.148124	0.106298	0.087178	0.169534	0.129617	0.134740	0.097097	0.000000	0.000000	0
	ta4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.190901	0.147048	0.154067	0.133373	0.105655	0.141068	0.087178	0.169534	0.129617	0.134740	0.097097	0.000000	0.000000	0
	ta5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.139714	0.137414	0.146237	0.133576	0.124318	0.155939	0.133120	0.168034	0.182608	0.197259	0.131031	0.000000	0.000000	0
	ta6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.136721	0.163352	0.205228	0.192593	0.196483	0.126930	0.100090	0.085117	0.018470	0.017005	0.170571	0.000000	0.000000	0
	ta7	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.173982	0.103961	0.109139	0.101375	0.145159	0.178141	0.262536	0.101420	0.187335	0.272982	0.200200	0.000000	0.000000	0

Moreover, the weighted super matrix is calculated as another output obtained from entering the importance weights as the result of the pairwise comparisons in the SuperDecisions software. It is notable that this super matrix is the result of dividing the columns of the unbalanced super matrix by the sum of each column. Thus, the sum of each column vector in the weighted super matrix is equal or close to one.

Finally, the limit super matrix is the last output of SuperDecision software which shows the importance weights of the indicators. This matrix is based on the matrix multiplication of the balanced super matrix with itself by a number of individuals until achieving a uniform limit for the indicators. This final matrix is known as the limit super matrix where the row elements contain the same numbers.

In this way, the importance weights of 26 research components were identified. Table 13 shows the final importance weights of these components and the final importance weights of the four general dimensions.

Table 11: balanced super matrix

Main Network: zare.sdmod: ratings: Weighted Super Matrix

Clusters	Nodes	di1	di2	di3	di4	di5	di6	di7	di8	po1	po2	po3	po4	po5	po6	se1	se2	se3	se4	se5	ta1	ta2	t
differentiating	di1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.090395	0.056867	0.056528	0.056323	0.064339	0.068784	0.042646	0.042290	0.041883	0.053870	0.039652	0.037548	0.046747	0
	di2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.093097	0.072122	0.067484	0.084484	0.079998	0.068984	0.061185	0.063031	0.058390	0.050828	0.046260	0.065159	0.055689	0
	di3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.072036	0.062019	0.045723	0.057323	0.056084	0.063582	0.038478	0.034118	0.036981	0.036426	0.036080	0.033313	0.053120	0
	di4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.082391	0.086176	0.095298	0.087335	0.082650	0.080940	0.049015	0.049436	0.054589	0.052294	0.053303	0.053255	0.041441	0
	di5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.015008	0.080574	0.087344	0.067827	0.081249	0.082191	0.056584	0.061749	0.057723	0.061309	0.055739	0.057823	0.041375	0
	di6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.093347	0.032910	0.029815	0.031212	0.025015	0.053077	0.018072	0.004654	0.017474	0.007256	0.003505	0.049620	0.033367	0
	di7	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.027414	0.083475	0.091396	0.089486	0.081349	0.030865	0.049848	0.005790	0.016807	0.067356	0.065418	0.017474	0.034401	0
	di8	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.026313	0.025858	0.026413	0.026010	0.029318	0.051576	0.017505	0.072266	0.049486	0.003994	0.033377	0.019141	0.027194	0
positioning	po1	0.076065	0.081775	0.100720	0.083167	0.095738	0.098179	0.091477	0.097260	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.056623	0.076257	0.069360	0.079249	0.053912	0.028172	0.044442	0
	po2	0.079816	0.076473	0.099820	0.079266	0.090886	0.095279	0.097379	0.095510	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.052288	0.067269	0.069580	0.055845	0.053245	0.050643	0.063079	0
	po3	0.066363	0.075523	0.096319	0.072414	0.083934	0.089227	0.090177	0.083508	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.068894	0.046323	0.063351	0.055611	0.037752	0.061246	0.047476	0
	po4	0.066713	0.080024	0.097169	0.083017	0.112795	0.105982	0.118736	0.108611	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.059090	0.071864	0.070570	0.061746	0.047981	0.054411	0.060012	0
	po5	0.094819	0.091127	0.105121	0.087668	0.001401	0.005302	0.100030	0.113111	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.092604	0.063120	0.056353	0.034440	0.066340	0.064546	0.054378	0
	po6	0.116223	0.095079	0.000850	0.094469	0.115246	0.106032	0.002201	0.002000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.003835	0.008500	0.004118	0.046443	0.074104	0.074315	0.063946	0
segmentation	se1	0.057604	0.055829	0.090380	0.104291	0.138512	0.067064	0.093827	0.090893	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.070895	0.060946	0
	se2	0.113668	0.098102	0.182126	0.120435	0.121192	0.097619	0.122991	0.105572	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.062992	0.069114	0
	se3	0.149155	0.117231	0.050526	0.097019	0.060074	0.083104	0.064048	0.146382	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.061691	0.057712	0
	se4	0.090060	0.128427	0.075814	0.075098	0.085318	0.153808	0.124598	0.090893	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.065626	0.062279	0
	se5	0.089513	0.100412	0.101153	0.103157	0.094904	0.098406	0.094536	0.066261	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.072129	0.083283	0
targeting	ta1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.055011	0.092793	0.055109	0.084767	0.073305	0.071005	0.057151	0.051477	0.065670	0.043013	0.058358	0.000000	0.000000	0
	ta2	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.069857	0.057796	0.064653	0.062217	0.066825	0.074807	0.052814	0.050643	0.051781	0.038078	0.042976	0.000000	0.000000	0
	ta3	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.054473	0.073524	0.072903	0.072558	0.074062	0.053149	0.029059	0.056511	0.043206	0.044913	0.032366	0.000000	0.000000	0
	ta4	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.095450	0.073524	0.077033	0.066686	0.052827	0.070534	0.029059	0.056511	0.043206	0.044913	0.032366	0.000000	0.000000	0
	ta5	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.069857	0.068707	0.073119	0.066788	0.062159	0.077970	0.044373	0.056011	0.060869	0.065753	0.043677	0.000000	0.000000	0
	ta6	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.068361	0.081676	0.102614	0.096296	0.098242	0.063465	0.033363	0.028372	0.006157	0.005668	0.056857	0.000000	0.000000	0
	ta7	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.086991	0.051980	0.054569	0.050688	0.072579	0.089071	0.087512	0.033807	0.062445	0.090994	0.066733	0.000000	0.000000	0

Table 12: limit super matrix

Main Network: zare.sdmod: ratings: Limit Matrix

Clusters	Nodes	di1	di2	di3	di4	di5	di6	di7	di8	po1	po2	po3	po4	po5	po6	se1	se2	se3	se4	se5	ta1	ta2	t
differentiating	di1	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0.037613	0
	di2	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0.045026	0
	di3	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0.034059	0
	di4	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0.045742	0
	di5	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0.040674	0
	di6	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0.023116	0
	di7	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0.035502	0
	di8	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0.023982	0
positioning	po1	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0.049322	0
	po2	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0.049035	0
	po3	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0.047100	0
	po4	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0.053366	0
	po5	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0.049939	0
	po6	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0.036952	0
segmentation	se1	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0.038845	0
	se2	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0.048670	0
	se3	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0.040984	0
	se4	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0.044542	0
	se5	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0.041245	0
targeting	ta1	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0.032407	0
	ta2	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0.028854	0
	ta3	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0.028246	0
	ta4	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0.029730	0
	ta5	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0.031483	0
	ta6	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0.030127	0
	ta7	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0.033440	0

As the results show, positioning dimension was identified as the most important one in marketing strategy formulation in the country's electricity industry. This means we need to focus on the local elements identified for this dimension in the processes of formulating and explaining marketing strategies in the same industry. According to the results, using special and unique approaches in market positioning measures, trust building approaches as well as the development of infrastructure capabilities in market positioning were identified as the top three components. It reflects this fact that the indicators in each of these three components are important to notice.

5 Discussion and conclusion

First of all, Fuzzy DEMATEL was implemented in order to identify the network or causal structure between the dimensions of the marketing strategy in the electricity industry so that a deeper understanding of the extent of the internal dependencies of the factors can be achieved. Then the network structure of the external relationships between the four dimensions of marketing strategy in the electricity industry of the country was recognized. The ANP standard questionnaire was built based on this structure. In this way, the importance weights of 26 research components were identified. Table 13 shows the final importance weights of these components and the final importance weights of the four general dimensions. As the results show, positioning dimension was identified as the most important one in marketing strategy formulation in the country's electricity industry. This means we need to focus on the local elements identified for this dimension in the processes of formulating and explaining marketing strategies in the same industry. In addition, using special and unique approaches in market positioning measures, trust building approaches as well as

Table 13: The final importance weights of 18 components

(dimensions)	Final weights	Components	Final weights
Segmenting	0.214	Factors related to the customers	0.0388
		Segmenting criteria	0.0486
		Time factors	0.0409
		Political and government factors	0.0445
		Collecting and analyzing of information	0.0412
Targeting	0.213	Resources allocation	0.0324
		Attention to the international markets	0.0288
		Using mega marketing	0.0282
		Continuous market research	0.0297
		Knowing customers	0.0314
		Knowing organization and environment	0.0301
		Clarification of targeting criteria	0.0334
Differentiating	0.285	Contingent management structures	0.0376
		implementation of advertising campaigns	0.0450
		Providing real advantages	0.0340
		Accurate identification and evaluation of competitors	0.0457
		Customer-based differentiation	0.0406
		Technical factors	0.0231
		Price factors	0.0355
		Time factors	0.0239
Positioning	0.286	Development of infrastructure capabilities	0.0493
		Improving brand image	0.0490
		Environmental activities	0.0417
		Unique approaches	0.0533
		Trust building approaches	0.0499
		Acquisition of the continuous information	0.0369

the development of infrastructure capabilities in market positioning were identified as the top three components. It reflects this fact that the indicators in each of these three components are important to notice.

The best indicator in market segmenting is segmenting criteria. The market of any product consists of buyers and consumers as a group of people with their own interests, characteristics and preferences. Various demands of the consumers influence on different behaviors which, in turn, lead to the preference of a certain type of product over another. Thus, the suppliers segment their product market to produce products according to the taste and demand of consumers. Segmenting in the electricity industry is of great importance because it is a very fundamental industry. The competitive market necessitates moving towards segmenting the market so that the needs and demands of the customers can be met. The special nature of the electricity requires that the whole market be divided into smaller parts because the needs of each sector are completely different from those of another sector. In other words, the heterogeneous market should be separated into different sectors using different criteria based on the preferences and demands of the consumers. Being aware of the type of the company, the nature of its activities, its organizational structure and the type of its demands add to the necessity of segmenting.

Consumer purchasing power and its investigation matters in the effective segmenting, especially in new economic conditions of companies. Thus, it is better to be aware of the market and the needs of the customers first and then learn about the competing companies to see how we can use their weakness in favor of ourselves. The important point in segmenting industrial markets is that each sector should be large and profitable enough. On the other hand, each sector should be completely different from other sectors and can be accessible through distribution and communication channels. The most common segmenting in the electricity industry is segmenting based on the product. The product in this industry is electrical panels. In other words, the market of this industry is segmented based on industrial, agricultural, integrated, etc. Another segmenting is based on the geographical location of the customer. Since the power transmission lines in Iran are too worn out and cause a lot of energy loss, the geographic location should be considered in market segmenting and geographical location should be one of the indicators for this aim. If segmenting is based on the geographic location, companies with more famous brands offer their products at a higher price to their customers. In this condition, these companies focus their market on areas with better financial situation. The electricity industry is one of the few industries that operates in all geographical regions because of its nature, and its power plants are located in various regions with different climates. In market segmenting, if the government budget bill for the next year is presented, the construction budget and the construction, supply and maintenance should also be examine simultaneously. In this way, in bad market conditions and uncertainty, the market can be better controlled with the help of small segmentations in a large environment. Moreover, the nature of this industry requires to divide the whole market into smaller parts because the needs of each sector are completely different from the other sector.

As an example, the public sector's demands from power companies are completely different from those of the private sector. In the same way, large and small companies or companies with various types of electrical products vary in terms of the nature of their commercial activity and their needs.

In the electricity industry, segmenting is based on three factors: competition, type of exchanges and time. To put it differently, electricity markets can be divided into different sectors depending on the level of competition in the market, the structure of exchanges and the periods of activity. In the electricity industry, there are markets with different levels of competitiveness. Since the major buyers of electric energy in the country are state organizations and companies, market segmenting activity can be done by giving priority to organizations and companies that will have desirable financial power in the current year. It is possible through focusing on the budget bill and getting awareness of the level of budgeting in state organizations and companies. Moreover, State industries are major buyers and customers of electrical energy producers. Thus, stock market indices can be a good indicator of the level of performance and consequently the energy needs of these companies. Therefore, these indices can be considered as one of the appropriate factors for segmenting the market (customers with high needs). Generally speaking, identifying the differences between sectors, being aware of the optimal profitability in sectors, segmenting the market based on the product, segmenting based on the geographical location of the customer, stock market indices of government industries and focusing on the small sectors are some cases that should be considered in the discussion of segmenting criteria.

The best indicator for market targeting is explaining targeting criteria. One of the biggest weaknesses of Iran's electricity industry is the lack of self-awareness of companies. if this weakness is overcome, a proper targeting can be achieved. In other words, the potential of power companies should be exactly known and analyzed. It is one of the most important points in market targeting. if companies have no up-to-date knowledge on strategic capabilities, they certainly cannot explain effective marketing strategies in accordance with these capabilities. Strategies designed to target the market should be flexible. The stability of the goals does not necessarily mean that the plans are unchangeable. For this purpose, the short-run strategic plans aligned with long-run goals should be used. To put it differently, these strategies can be changed and modified according to the market conditions and the performance of competitors. On the other hand, long-run goals should also be defined for organizations. These goals should be relatively permanent and stable, unless environmental changes cause them to be revised. In this regard, the major goals of the electricity industry should be noticed. In the meantime, attention should be paid to the major goals of the electricity industry. The importance of these goals depends on the role that each of them plays in realizing the major goals of the electricity industry in each field.

One of the most important factors on the effective targeting in the electricity industry is the exact analysis of the needs of potential and key customers. In this way, the demands and desires of the customers can be determined by evaluating the behaviors of customers in the past, including their needs, purchases, the type of consumption etc. Another main factor in the market targeting is the resource allocation. The resource allocation is the main step in strategic implementation. Establishing the balance between the strategic goals and plans, on one hand, and human, financial, technological and physical resources allocation, on the other hand, is very essential in order for the strategic continuity to be ensured. In general, it should be said that in explaining the targeting criteria, the flexibility of market targeting strategies, determining the long-run goals of targeting, noticing the macro goals of the electricity industry, targeting according to the number of customers and the temporary and short-run investments should be emphasized.

The best indicator in the market positioning is using the unique approaches. The first and the most important step for designing a positioning strategy is determining the priorities of the benefits and costs related to a given suggestion. To do so, a part of the potential benefits and advantages should be ignored and instead, the focus should be put on the specific cases. In addition, the development of fundamental capabilities in the electricity industry plays a key role in creating a favorable image of the company in the minds of customers. Many Iranian managers pay less attention to creating a favorable image in the minds of their key customers and so to speak, they try to meet the needs of all their customers with different tastes and demands. All big brands have determined a specific position for their products or services and target specific customers. The most important point is that every company can gain prestige in the minds of its customers. However, due to the current situation, sanctions and other similar problems, many companies are not able to deliver products on time. At present, many decision-makers and policy makers of the electricity industry in many countries are looking to reconstruct and position this industry in accordance with increasing efficiency and competition in other industries. In this regard, advertising campaigns are very effective. Holding conferences and seminars and designing special catalogs and brochures containing correct information can help a lot. In the positioning step, one of the approaches that the electricity industry can benefit from to formulate marketing strategy is the perceptual map. Perceptual maps have been one of the strategic management tools for 30 years. They help managers to understand the complex relationship between market competitors and consumer criteria in purchasing decisions. This powerful tool can be a strong support for strategic decisions over product and

marketing. One other thing which should be considered in positioning is that the manager decides to choose the main feature of the products based on the needs of a customer competitive offers and market conditions. If a manager has no emphasis on a specific feature, in this case, a general positioning approach is considered. This trend, in turn, draws the customer's attention to the overall performance of the product or service so that the communication activities are built on this base. The development of a positioning strategy based on the distinctive features of your product and service, price, quality of product and service delivery contributes to upgrading your position among competitors.

Companies should always try to improve their position to stay on the minds of consumers need and determine exactly their advantages over other companies. It means how to improve the capabilities of the company according to the needs of the market or guarantee its survival. Undoubtedly, due to the special nature of electrical products, customers want to purchase from the companies that offer a proper guarantee to them, deliver their product on time, or have a proper warranty. Thus, companies should know the market and the demands of the customers and the way they can use their weaknesses for their own benefit. In addition to the information capabilities required in the electricity industry markets, the accurate knowledge of the target market and target customers of the companies is another key element for positioning. The reason is that this knowledge can lead to appropriate marketing programs in order to influence this group of customers. Providing necessary quality guarantees is one of the most important factors. Certainly, due to the special nature of electrical products, various customers want to purchase from the companies with the proper guarantee to deliver the product on time or have the proper warranty. Therefore, some examples of specific approaches in positioning include using perceptual maps, focusing on competitive offers in positioning, positioning by identification and analysis of customer needs, focusing on holistic positioning, positioning by distinctive product features and focusing on new approaches considering sanctions.

The best indicator of product differentiating in the market is the identification and evaluation of competitors. The electricity structure has been changed in countries where the economic system was based on the market, and making the electricity industry competitive is the end of the line of privatization. In this regard, advertising campaigns are very effective. Holding conferences and seminars and designing special catalogs and brochures providing the correct information is very effective. Differentiating by improving quality, competitive price, timely delivery, respect for customer needs and a well-known and reliable brand can be done more easily if the customers really come to this conclusion that we are superior to our competitors in these cases. In order to differentiate, first, the customers and their needs should be identified and then needs of us and of our competitors should be known to fill the gaps. Moreover, privatization in the electricity industry in order to increase productivity and reduce prices brings about a healthy competition in the electricity market. Using renewable energy sources in electricity production, the optimal technology to increase the efficiency of power plants, developing gas power plants to the combined cycle and foreign partnerships can also significantly influence differentiating. One way to build differentiating in the electricity industry is updating of electricity production equipment to reduce its final costs for consumers. In this industry, the increase and fluctuations in the exchanged price of electricity as one of the major concerns of the market regulators, is due to the abuse of market power by actors. Appropriate timing to provide competitive advantages is one of the most important factors in this sector. This factor is important because the competitors are always providing various solutions and competitive advantages in order to increase their market share. Thus, it is necessary to see the advantages beyond the solutions provided by the competitors in the consumer market during an appropriate timing. Another important factor is providing an advantage for the first time in the market. To be the first for the market means to be the first brand in a certain geographic area. However, usually, it means offering a new type of product, service, or new customer experience. In this way, the ability to respond to the needs of customers before other competitors is very important.

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