Organizational Sustainable Competitive Advantage Using ORESTE, TRIZ, SWOT Approaches in Gray Conditions

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Abstract
In today world, organizations' performance and making the sustainable competitive strength have become incrementally important for them according to the quick global evolutions. The dairy industry is one of the most important industries which has made very competitive environment. The case study of this research is Kaleh Dairy Company as one of the active companies in dairy industries. One of the most important strategic management tool called SWOT analysis was used in this research to determine the position of Kaleh Company. IE, IFE, and EFE matrices have been used to determine the proper strategies and competitive position of the company. SWOT technique was mixed with TRIZ to remove defects and improve SWOT technique and also formulate strategies. Then, the formulated strategies were prioritized by gray ORESTE to rank strategies for lack of information and non-precision data which was resulted by experts using verbal variables.

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INTRODUCTION

The organization is one of the greatest inventions of the humans. It is the existence by which people cooperate with each other to obtain an objective. Organizations can obtain great achievements and honors. These achievements are highly more than what people can do alone (Keller and Price, 2014). Coca-Cola was born on May 29, 1887, Michelin in 1989, Camel in 1813, Orangea in 1936, and Marlboro in 1987. These are trademarks that have remained; many others were disappeared or forgotten forever. What causes this awful event is lack of a strong strategy to be able to perceive the external and internal environments of the company and its quick changes. The organization must have an effective strategic management system. The strategic management includes three main steps: formulation of strategies, execution of strategies, and evaluation of strategies (Wang et al., 2014). SWOT analysis is the most popular strategy planning and removal tool of organization problem (King, 2004).

Evaluation of the strengths and weaknesses of the resources of a company and its external threats and opportunities are known as SWOT analysis.

SWOT is the used tool to make the competitive strength to determine market position and strategy (Lee and Hsieh, 2012). SWOT analysis is a key tool in the sophisticated strategic condition to improve decision-making (Helmz and Nixon, 2010). SWOT model classifies analysis factors internally (Strength and Weakness) and externally (opportunities and Threats), and its results are mostly as the defect list of external and internal factors. Therefore, it can't evaluate the decision-making process comprehensively (Kamaeizadeh and Rezaei, 2015). SWOT technique is combined with the creative problem-solving theory of TRIZ to remove the defects of SWOT technique and the technical and physical conflicts in the organization which improves the organization performance and its competitive strength (Brad and Brad, 2015). Altshuller theory called the creative problem-solving theory of TRIZ was formed by this rule: evolution of all technical systems follows a purposeful laws series. According to these laws, when the development of each element of the system reaches to the climate of its performance and duty in the evolution process of a technical system, it faces with contradiction with another or other element(s). This contradiction gradually improves the less developed elements and moves the system toward the ideal direction (Altshuller and Shoulyak, 2006). Generally, as organizations have limited resources for fulfilling their goals, managers should always make important decisions regarding selecting the best option among different alternatives (Alinezhad and Esfandiari, 2011). SWOT technique is not able to rank the strategies and factors, but MADM techniques are used to rank factors (Shahabi et al., 2014). Multi-attribute decision making (MADM) models are selector models that are used for evaluating, ranking and selecting the most appropriate alternative from among several alternatives (Alinezhad and Amini, 2010). MADM is used to select the prior choice. Actually, the decision-maker wants to select the prior choice among several independent consumed choices according to the indexes. Professor Marc Roubens, the professor at Belgium Polytechnic University, offered his first idea about the new multi-index decision-making technique called ORESTE or accumulative ranking technique to compare the choice ordering evaluation based on indexes in 1979 (Mehamedpour and Asgharizadeh, 2008).

Fuzzy theory and gray systems theory are one of the most applied techniques in systems study by uncertainty. These techniques are able to work with uncertain and defective data. The perceptive uncertainties result from the intrinsic sophistication of the phenomenon and lack of full information about it (Malek et al., 2011).fuzzy set theory, proposed by Zadeh has become a helpful tool in handling the imprecise conditions and attributes of portfolio selection (Alinezhad et al., 2011). Gray systems have been developed to describe and study this aspect of phenomena as the developed form of Fuzzy theory in conditions with incomplete qualitative information (Malek et al., 2011). This research determines the optimum strategy to improve the organization performance and make a sustainable competitive strength by TRIZ, SWOT, and gray ORESTE combined approach.

METHOD AND DATA COLLECTION TOOL

This research was conducted by the surveying-librarian method. A case study is Kaleh Dairy Company as one of the active companies in dairy industries field. The statistical population of this research includes 6 expertise and master managers on the internal and external operations of Kaleh Dairy Company according to the subject and method. The open questionnaire with the visual interview was used to formulate the strategies of Kaleh Dairy Company based on Thompson and Gamble strategic management model to collect managers, experts, and scholars' ideas. After the internal and external factors, competitive analysis of the organization, the weight, score, and weight score of the internal and external factors were obtained using external factors evaluation (EFE) matrix and internal factors evaluation (IFE) matrix to indicate the rank of the organization. The sum of total final scores never exceeds 4 and gets lower than 1, and their mean is 2.5 in IFE and EFE matrixes. If the final score of the organization is less than mean, it means organization had weakness according to the internal factors and threats according to the external factors, and if this score is more than mean, it means that organization has strength according to the internal factors and opportunity according to the external factors (David, 2015). The IFE and EFE matrixes (IE) are used to analyze external and internal factors simultaneously. This matrix is used to determine the industry or organization position. Therefore, the obtained scores from EFE and IFE matrixes are putting in vertical and horizontal dimensions to form the matrix and indicate the industry or organization position. This matrix is adapted with SWOT matrix and indicates the proper strategies for the organization. The evaluation tools are based on the studies and using the honorable supervisor and some experts from Kaleh Dairy Company. In addition, Cronbach's alpha coefficient from SPSS software has been used to determine the reliability coefficients of the internal and external factors questionnaire which are effective in the organization. The obtained Cronbach's alpha coefficient for the internal factors was 0.892 and external factors 0.823 which show the reliability of measuring tool.

THE OBTAINED RESULTS FROM SWOT TECHNIC IN ORGANIZATION

After collecting the questionnaires with analysis and interview with experts, list of weaknesses and strengths is shown in Table 1 and list of threats and opportunities is shown in Table 2.

Table 1: the internal effective factors in SWOT matrix

Internal effective factors	
Strengths (S)	**Weakness (W)**
High quality of the products	High price of the products
Varieties of the products	Extra varieties of the products
Having high level of technologies	Weak relationship with customers
Financial power (sufficient capital)	The weak environmental advertisements
Education level and experience of people in organization	Inefficient relationship among various units
Having market research	Replacement of human force and high commuting
R & D	Lack of enough motivation in employees
Leading in the industry	Lack of job security
The presence of factory in one of the biggest areas and adjacency to the suppliers of dairy products	Lack of definite procedure to promote employees' job
Exports	Long hierarchy

Table 2: the effective external factors in SWOT matrix

External factors	
Opportunities (O)	**Threats (T)**
The extension of population age pyramid	Entrance of strong rivals to the market
Prohibition of importing dairy products	Boycott
Increasing the penetration rate of internet	Inflation rate
Adjacency of the neighbor markets	Exchange rate
Possibility of packing the products in accordance with the green industry	Targeting subsidies
The presence of extensive domestic markets	Instability of tariffs
Increasing of per capita consumption	Entrance of lux and foreign products to market
Supporting the dairy products export	Importing the initial materials
Culture of using the dietary products	Extensive advertisement of rivals
Participation in internal and international exhibitions	Attracting the efficient forces by rivals

The effective internal factors of Kaleh Company were given to 6 experts. These factors are shown in Table 3 in the first column. Score and weighted score of factors were calculated. The sum of the weighted scores for Kaleh Company was obtained 2.51, which shows the dominance of strengths on weaknesses of this organization and its results are shown in Table 3.

Table 3: the internal factors evaluation (IFE) matrix of Kaleh Dairy Company

Internal effective factors	Weighted score	Score	Weighted rank
Strength (S)			
High-quality products	0.08	4	0.32
Variety of products	0.05	4	0.2
Having high technology	0.05	3	0.15
Financial power (sufficient capital)	0.07	4	0.28
Level of education and experience of the organization	0.04	4	0.16
Having market research	0.04	3	0.12
R & D	0.03	3	0.09
Leading in the industry	0.05	4	0.2
The presence of the factory in one of the largest areas and adjacency to the suppliers of raw materials	0.03	3	0.09
Export	0.06	4	0.24
Weaknesses (W)			
High product prices	0.07	1	0.07
extra product varieties	0.06	2	0.12
Weak communication with customers	0.06	1	0.06
Weak environmental advertising	0.07	1	0.07
Insufficient relationships between different units (production, marketing, sales)	0.02	2	0.04
Changing the human force and high commuting	0.05	2	0.1
Lack of sufficient motivations for employees	0.06	1	0.06
Lack of job security	0.04	1	0.04
Lack of a clear process for employee promotion	0.03	2	0.06
Long hierarchy	0.04	1	0.04
Total	1		2.51

This matrix is acted exactly like matrix of internal factor evaluation (IFE), then the external factors of Kaleh Dairy Company were listed, and score, weighted score, and weighted rank of factors were calculated in Table 4.

Table 4: The internal factors evaluation (IFE) matrix of Kaleh Dairy Company

External effective factors	Weighted score	Score	Weighted rank
Opportunities (O)			
The extension of population age pyramid	0.07	4	0.28
Prohibition of importing dairy products	0.07	2	0.14
Increasing the penetration rate of internet	0.04	4	0.16
Adjacency of the neighbor markets	0.05	3	0.15
Possibility of packing the products in accordance with the green industry	0.04	2	0.08
The presence of extensive domestic markets	0.03	3	0.09
Increasing the per capita consumption	0.05	3	0.15
Supporting the dairy products export	0.05	3	0.15
Culture of using the dietary products	0.07	3	0.21
Participation in internal and international exhibitions	0.03	2	0.06
Threats (T)			
Entrance of strong rivals to the market	0.04	2	0.08
Boycott	0.07	1	0.07
Inflation rate	0.04	2	0.08
Exchange rate	0.05	1	0.05
Targeting subsidies	0.03	3	0.09
Instability of tariffs	0.06	2	0.12
Entrance of lux and foreign products to market	0.02	3	0.06
Importing the initial materials	0.06	1	0.06
Extensive advertisement of rivals	0.07	2	0.14
Attracting the efficient forces by rivals	0.06	2	0.12
Total	1		2.34

The obtained total weighted score is 2.34 showing the internal factors rate of the company on the internal factors axis. This number shows the dominance of the environmental threats on the environmental opportunities in Kaleh Dairy Co. The obtained scores from IFE and EFE were put in vertical and horizontal dimensions, and the proper strategy is obtained using fig. 1 in order to know which four strategies groups to use after SWOT analysis of Kaleh Dairy Co.

TRIZ TECHNIC

TRIZ technique was used in engineering sciences for the first time, but it can also be used in managerial sciences by changing. In this research, TRIZ technique was used to improve SWOT matrix and remove the contradicted problems resulted from it and formulation of ST strategies. The implementation of TRIZ technique in Kaleh Co. and its combination with SWOT technique caused the organizational competitive strategies (ST) to be finally formulated by removing the made technical contradictions. In this research, the technical system of Kaleh Dairy Co. and its sub-systems are the key components of business such as management, production, distribution, R&D, sail, marking, and service providing to the customers. The technical system must be known at first to formulate the strategies that is Kaleh Co. in this research. The aim of this research is organization reaching the performance improvement and making a competitive strength. It means organization' strengths must be improved which are a competitive strength to reach prior competences and sustainable competitive strength and approach the com-

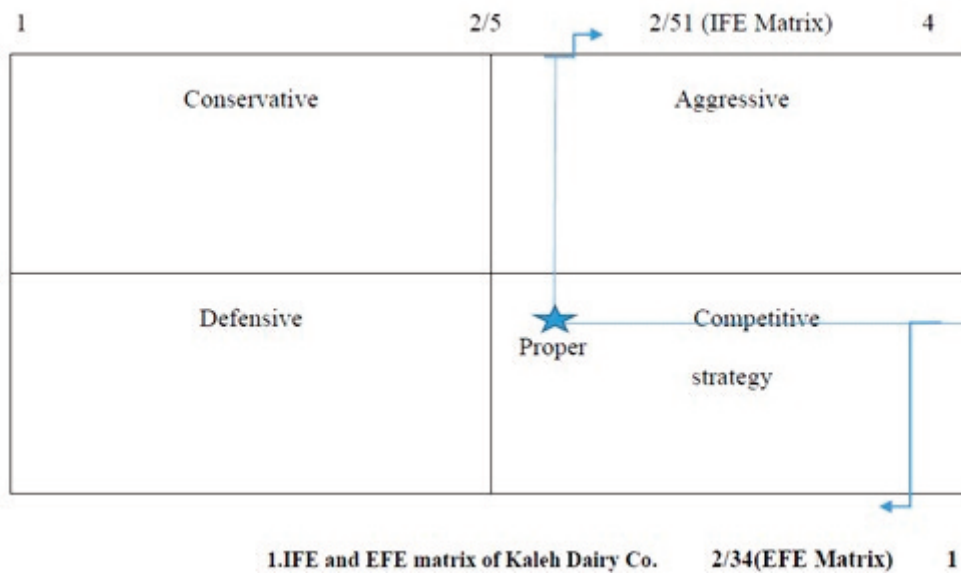1.IFE and EFE matrix of Kaleh Dairy Co.   2/34(EFE Matrix)   1

Fig.1.Matrix analysis of internal and external

pany to its idea borders. Now, we face contradictions to reach this fact to improve our competitive strength and reduce or remove the negative parameter which are threats here. This contradiction happens when we want to improve a parameter or characteristics in a technical system which weakens another parameter.

The invented principles to improve competitive strengths

The positive parameter to improve is organization performance. If organization performance improves, the pressure on key components of the company increases. Then, 39 contradicted parameters with matrix were examined and determined to determine the desirable and undesirable parameter. The determined parameters are as follows:

Desirable parameter: 39

undesirable parameter: 11

A proper invention to improve the competitive strengths is as follows:

Principle 10- preliminary action

Principle 14- curving the principle

Principle 37- thermal expansion

The invented principles to reduce or remove threats effect:

The reduced or removed parameter in examining the threats is the effect of external factors, and the weakened parameter by this condition is the internal power of the organization. The determined parameters are as follows:

Desirable parameter: 21

undesirable parameters: 30

Invented and proper principles to reduce or remove threats effect:

Principle 2- adaptation

Principle 19- periodic action

Principle 22- changing the loss to the profit

Principle 31- porous materials

This principle is not applied in this research.

Now, using this principle led to remove SWOT analysis contradictions, more idealization of the technical system, organization performance improvement, and the competitive strengths improvement. The strategies (S strategies) were formulated using threats and strengths of Kaleh Co. Results are shown in table 5.

Table 5: ST formulated strategies

Formulated strategies	The used invented principles
Reinforcement, specialization, and actualization of the marketing activities and utilization of the successful organizations' experiences in this field	Principle 14 Curving Principle 37 Thermal expansion
Introduction of new, attractive, and customer-friendly products and utilizations of machinery technology to protect and promote trademark ranking	Principle 2 AdaptationPrincipe 10Preliminary action
Preparation of the qualified raw materials to the loyal, secure, and internal competent suppliers	Principle 22 Changing the loss to the profit Principle 37Thermal expansion
Using the good financial power of the company for extensive and qualified advertisement	Principle 22 Changing loss to profit Principle 10 Preliminary action
Investment in the key components of business to increase the power and skill in making the vital competence	Principle 19Periodic actionPrinciple 10 Preliminary action

ORESTE model

• *Formation of position matrix*

In this matrix, choices ranking is stated based on indexes that is done based on the received information from the decision-maker.

• *Calculation of the block distance*

The block distance of each choice is obtained as the following relation:

$$(0, A_{ij}) = \alpha (\alpha) + (1 - \alpha) r_{jj} = 1, 2, …, n \qquad (1)$$

In which, α is substitution rate and $0 < \alpha < 1$, rj is that prioritized values of indexes by the decision-maker, and rij is the value of the matrix of the position i for the index j.

• *Formation of block distance matrix*

Block distance of each position matrix array is calculated and is put in the block distance matrix.

• *Ranking*

Ranking based on pair wise comparison of block distance is as follows:

If $(0, Aij) \leq (A\acute{i}j)$, consequently, $(Ai) \leq (Ai)$, and usually $1/2 \leq \alpha \leq 1/3$ is considered.

• The final ranking of choices and calculation of the strengths and weaknesses of choices

Ranking the total choices is obtained by attribution of rank to each choice-index value and sum of all mutual indexes using the following relation:

$$(A) = \sum_i (A_i) i = 1, 2, … . ., m \qquad (2)$$

Gray ORESTE

ORESTE multi-dimensional decision-making method was combined with gray systems theory to increase the accuracy and precision results in this part to rank the strategies to reach the optimum strategy, lack of certainty for few numbers of experts, using verbal variables, and also incomplete information to rank the indexes and choices which is the innovation aspect of this research.

The gray ORESTE ranking method was used in this part to reach the optimum strategy and remove other defects of SWOT method.

Methodology

• Introducing the sets

• Identifying the present criterions (evaluation indexes)

• Calculating criterions weight to form r_j preference structure

• Identifying choice (strategies) and their ranking based criterions and forming gray matrix

• Forming gray normalized matrix

• Forming position matrix

• Calculating block distance d(0,Aij)

• Forming block distance matrix

• Ranking

• Final ranking of choices and calculating values of choices strengths and weaknesses

Identifying criterions

The offered evaluation indexes by Hulli et al.

(2005) that evaluate the competitive strategies of organizations as indexes have been used in this research. These indexes are as follows:

Q_1= managerial capabilities

Q_2= the capabilities of relationship with customer

Q_3= modern capabilities of market

Q_4= assets of human resources

Q_5= deputation assets

Calculating criterions weights

Each linguistic variable can be shown by a gray number of $\otimes W_i^j = [G\_i^j, \bar{G}_i^j]$.

$$\otimes W_i = 1/K [\otimes W_i^1 + \otimes W_i^2 + \cdots + \otimes W_i^K] \quad (3)$$

Linguistic variables and their related gray numbers are based on Table 6.

Table 6: linguistic variables to determine the importance of variables and their related gray numbers

Scale	$\otimes W$
Very low	[0.0, 0.1]
Low	[0.1, 0.2]
Medium	[0.2, 0.3]
High	[0.3, 0.4]
Very high	[0.4, 0.5]

The gray number of $\otimes W\_i^k$ is obtained using the decision-making ideas. For example, we have for W_{Q1} as:

$$W_{Q1} = 1/3 \{\otimes W_{Q1}^1 + \otimes W_{Q1}^2 + \otimes W_{Q1}^3\} \quad (4)$$
$$= 1/3 \{[0.0, 0.1] + [0.2, 0.3] + [0.1, 0.2]\}$$
$$= [(0.0 + 0.2 + 0.1)/3 + (0.1 + 0.3 + 0.2)/3]$$
$$= [0.1, 0.2]$$

The related results to this step are shown in Table 7.

Table 7: criterions weights based on decision-makers ideas

WQI	Q_i
[0.1, 0.2]	Q_1
[0.333, 0.433]	Q_2
[0.166, 0.266]	Q_3
[0.366, 0.466]	Q_4
[0.233, 0.433]	Q_5

Choices ranking

Relation 5 is used to evaluate the choices than indexes:

$$\otimes G_{ij} = 1/K [\otimes G_{ij}^1 + \otimes G_{ij}^2 + \cdots + \otimes G_{ij}^k] \quad (5)$$

Linguistic variables and the related gray numbers to rank choices are shown in Table 8.

Table 8: Linguistic variables and the related gray numbers to rank choices

Scale	G
Very low	[0, 1]
Low	[1, 2]
Medium	[2, 3]
High	[3, 4]
Very high	[4, 5]

$\otimes G_{ij}^k$ is the valuation of the kth decision-maker for the ith choice than i^{th} criterion. Choices in this research are the formulated strategies that were obtained by a combination of SWOT analysis and TRIZ technique. Later choices will be discussed.

A_1= reinforcement, specialization, and actualization of marketing activities, and utilization of the successful organizations' experiences in this field.

A_2= introduction of the new, attractive, and customer-friendly products and utilization of the machinery technology to keep and promote the rank of the trademark.

A_3= supplement of the qualified raw materials from loyal, secure, and domestic competence suppliers

A_4= use the good financial power of the company for qualified and extensive advertisement

A_5= investment in key business components to increase power and skill to make the vital competence.

Now, the gray decision-making matrix of $D = [\otimes G_{ij}]_{5 \times 5}$ is formed using relation (6):

$$\otimes G_{11} = 1/3 \{\otimes G_{11}^1 + \otimes G_{11}^2 + \otimes G_{11}^3\} \quad (6)$$
$$= 1/3 \{[0,1] + [1,2] + [0,1]\}$$
$$= [(0 + 1 + 0)/3] + [(1 + 2 + 1)/3]$$
$$= [0.33, 1.33]$$

All the gray decision-making matrixes from $\otimes G_{11}$ to $\otimes G_{55}$ have been calculated in this way.

Table (9) shows the gray decision-making matrix of $D^* = [\otimes G_{ij}]_{5\times5}$

Table 9: gray decision-making matrix

$$D^* = \begin{array}{c} Q_1 \\ Q_2 \\ Q_3 \\ Q_4 \\ Q_5 \end{array} \begin{matrix} A_1 & A_2 & A_3 & A_4 & A_5 \\ \begin{bmatrix} [0.33, 1.33] & [0.66, 1.66] & [3.33, 4.33] & [2.33, 3.33] & [3, 4] \\ [3.33, 4.33] & [2.66, 3.66] & [2.33, 3.33] & [1.33, 2.33] & [1, 2] \\ [4, 5] & [3.66, 4.66] & [1.66, 2.66] & [2.33, 3.33] & [2, 3] \\ [2.66, 3.66] & [3.66, 4.66] & [2.33, 3.33] & [1.33, 2.33] & [4, 5] \\ [3.33, 4.33] & [3.66, 4.66] & [2, 3] & [2.33, 3.33] & [2.66, 3.66] \end{bmatrix} \end{matrix}$$

The normalized decision-making matrix:

The normalized gray decision-making matrix can be obtained to change various scales of criterions to the comparable (measurable) scale.

Positive criterions:

$$\otimes G_{ij}^* = \left[\frac{\underline{G}_{ij}^k}{G_i^{max}}, \frac{\overline{G}_{ij}^k}{G_i^{max}} \right] \quad G_i^{max} = max_{1 \leq j \leq m}\{\underline{G}_{ij}\} \quad (7)$$

The normalized calculated gray matrix of $D^* = [\otimes G_{ij}]_{5\times5}$ is obtained. In this research, all criterions are profit type. For example, G_1^{max} is calculated.

$G_1^{max} = max\{0.33, 0.66, 3.33, 2.33, 3\}$

$G_1^{max} = 3.33$

$G_2^{max} = 3.66$

$G_3^{max} = 4$

$G_4^{max} = 4$

$G_5^{max} = 3.66$

After obtaining G_i^{max} (i= 1,2,3,4,5), the first cell from the first column and row of the normalized gray decision-making matrix is obtained as table 10.

$\otimes G_{11}^* = [0.33/3.33, 1.33/3.33] = [0.09, 0.39]$

Table 10: normalized gray decision-making matrix

$$D^* = \begin{array}{c} Q_1 \\ Q_2 \\ Q_3 \\ Q_4 \\ Q_5 \end{array} \begin{matrix} A_1 & A_2 & A_3 & A_4 & A_5 \\ \begin{bmatrix} [0.09, 0.39] & [0.19, 0.49] & [1.00, 1.30] & [0.69, 1.00] & [0.90, 1.20] \\ [1.00, 1.30] & [0.79, 1.09] & [0.69, 1.00] & [0.39, 0.69] & [0.30, 0.60] \\ [1.00, 1.27] & [1.00, 1.27] & [0.00, 0.72] & [0.63, 0.90] & [1.09, 1.36] \\ [0.66, 0.91] & [0.91, 1.16] & [0.58, 0.83] & [0.33, 0.58] & [1.00, 1.25] \\ [0.90, 1.18] & [1.00, 1.27] & [0.54, 0.81] & [0.63, 0.90] & [0.72, 1.00] \end{bmatrix} \end{matrix}$$

Forming the position matrix:

The prioritized values of indexes by the decision-maker are shown by rj, and value of position matrix i in index j is shown by rij. The initial information about position matrix formation is available. This matrix is formed in Table 11.

$r_1 = 4$, $r_2 = 2$, $3 = 5$, $r_4 = 3$, $r_5 = 1$

Table 11: position matrix

$$D^* = \begin{array}{c} A_1 \\ A_2 \\ A_3 \\ A_4 \\ A_5 \end{array} \begin{matrix} Q_1 & Q_2 & Q_3 & Q_4 & Q_5 \\ \begin{bmatrix} 5 & 1 & 1 & 3 & 5 \\ 4 & 2 & 2 & 2 & 1 \\ 1 & 3 & 5 & 4 & 5 \\ 3 & 4 & 3 & 5 & 4 \\ 2 & 5 & 4 & 1 & 3 \end{bmatrix} \end{matrix}$$

Calculating the block distance of d (0,A_ij)

The block distance of each choice is obtained, for example, d(0, A_{11}) is calculated.

d (0, A_{11})= 5α + 4(1-α)

= 5α + 4 -4α

= α+4

Forming the block distance matrix

In this part, d (0, A_{11}) to d (0, A_{55}) is calculated, and is put in block matrix in Table 12.

Table 12: block distance matrix

$$
D^* = \begin{bmatrix}
Q_1 & Q_2 & Q_3 & Q_4 & Q_5 \\
\alpha + 1 & 2 - \alpha & 5 - 4\alpha & 3 & \alpha + 1 \\
4 & 2 & 5 - 3\alpha & 3 - \alpha & 1 \\
4 - 3\alpha & \alpha + 2 & 5 & \alpha + 3 & 4\alpha + 1 \\
4 - \alpha & 2\alpha + 2 & 5 - 2\alpha & 2\alpha + 3 & 3\alpha + 1 \\
4 - 2\alpha & 3\alpha + 2 & 5 - \alpha & 3 - 2\alpha & 2\alpha + 1
\end{bmatrix}
$$

Ranking

Block distance is compared pair wise and the results as following were obtained.

1< α+1< 2-α< 2α+1< 2< 3-2α< 3α+1< α+2< 3-α< 4α+1< 4-3α< 2α+2< 4-2α< 3< 3α+2< 5-4α< α+3<

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	

4-α< 5-3α< 2α+3< 4< 5-2α< α+4< 5-α< 5

18	19	20	21	22	23	24	25

R(A_{11})= 23, R(A_{12})= 3, R(A_{13})= 16, R(A_{14})= 14, R(A_{15})= 2

R(A_{21})= 21, R(A_{22})= 5, R(A_{23})= 19, R(A_{24})= 9, R(A_{26})= 23

R(A_{31})= 11, R(A_{32})=8, R(A_{33})= 25, R(A_{34})= 17, R(A_{35})= 10

R(A_{41})= 18, R(A_{42})= 12, R(A_{43})= 23, R(A_{44})= 20, R(A_{45})= 79

R(A_{51})= 13, R(A_{52})= 15, R(A_{53})= 24, R(A_{54})= 6, R(A_{55})= 4

The final ranking of choice and calculating the strengths and weaknesses of them:

Total ranking of choice is obtained by attributing rank to each choice-index value and summing all mutual indexes using relation (8).

R(A_1) = 23+3+16+14+2= 58

R(A_2) = 21+5+19+9+1= 55

R(A_3) = 11+8+25+17+10= 71(8)

R(A_4) = 18+12+22+20+7= 79

R(A_5) = 13+15+24+6+4=62

$A_2 > A_1 > A_5 > A_3 > A_4$

According to the obtained results from ORESTE ranking technique in gray space, the strategies priorities were indicated and are shown in Table 13.

Table 13: prioritization of the formulated strategies

Formulated strategies	Strategies priorities using ORESTE gray technique
Reinforcement, specialization, and actualization of marketing activities, and utilization of the successful organizations' experiences in this field.	Second priority
Introduction of the new, attractive, and customer-friendly products and utilization of the machinery technology to keep and promote the rank of trademark.	First priority
supplement of the qualified raw materials from loyal, secure, and domestic competent suppliers	Fourth priority
use the good financial power of the company for qualified and extensive advertisement	Fifth priority
Investment in key business components to increase power and skill to make the vital competence.	Third priority

According to the priorities of strategies, the optimum strategy to improve Kaleh Dairy Co and make the sustainable competitive strength for it is the introduction of the new, attractive, and customer-friendly products and utilization of the machinery technology to keep and promote the rank of the trademark.

CONCLUSION

The most important aspect of an organization strategy is its approach to the competitiveness in the market. This point is important that a strategy of an organization reinforces its long-term competitive rank and makes it positive to have competitive strength than the rivals. To reach this rank, first the organization (in this research Kaleh Dairy Co.) must be analyzed and the list of internal and external factors is obtained. The rank must be known first. In this research, first the strengths, weaknesses, opportunities, and threats of Kaleh Dairy Co. were obtained then total weighted scores were obtained using IFE and EFE matrixes. After that, the internal and external (IE) matrixes were used to analyze the present condition of the company and formulate the proper strategies. The proper strategies based on the company's position are ST strategies. The obtained competitive rank from EFE and IFE for this company in the industry shows that this company must reinforce its strengths more to prevent the environmental threats. SWOT analysis has some defects, so SWOT analysis and TRIZ technique were combined to remove these defects and contradictions of SWOT matrix, improve it, and formulate the strategies. Its outputs were the ST formulated strategies. Later, ORESTE gray technique was used to rank the formulated strategies that combination of this multi-index decision-making technique of ORESTE with gray systems was the innovation of this research which increased the precision and accuracy of results. Finally, strategies were prioritized, and the optimum strategy was indicated to improve the performance of Kaleh Dairy Co. and make the competitive strength for it.

REFERENCES

Alinezhad, A., & Amini, A. (2011). Sensitivity analysis of TOPSIS technique: the results of change in the weight of one attribute on the final ranking of alternatives. *Journal of Optimization in Industrial Engineering*, (7), 23-28. □

Alinezhad, A., & Esfandiari, N. (2012). Sensitivity Analysis in the QUALIFLEX and VIKOR Methods. *Journal of Optimization in Industrial Engineering*, *5*(10), 29-34.

Alinezhad, A., Zohrehbandian, M., Kian, M., Ekhtiari, M., & Esfandiari, N. (2011). Extension of portfolio selection problem with fuzzy goal programming: A fuzzy allocated portfolio approach. *Journal of optimization in industrial engineering*, (9), 69-76.

Altshuller, G., & Shoulyak, L. (2006). 40 Principles: TRIZ Keys to Technical Innovation Karimi, M. &Mirkhani, N. Trans, *Tehran: Resa publication*, (8)160.

Brad, S., & Brad, E. (2015). Enhancing SWOT analysis with TRIZ-based tools to integrate systematic innovation in early task design. *Procedia engineering*, *131*, 616-625.

David, F. (2015). Strategic Management, Parsiyan, A. &Arabi, S. Trans, *Tehran: Cultural Research Bureau*, (32)687.

Gao, C. Y., & Peng, D. H. (2011). Consolidating SWOT analysis with nonhomogeneous uncertain preference information. *Knowledge-Based Systems*, *24*(6), 796-808.

Helms, M. M., & Nixon, J. (2010). Exploring SWOT analysis–where are we now? A review of academic research from the last decade. *Journal of strategy and management*, *3*(3), 215-251.

Kamaeizadeh, Y., & Rezaei, M.R. (2015). determination of the optimum strategy to develop sea tourism using the combined SWOT-ANP approach (case study: Kish Island). *The scientific and research Journal of Space-geography* (51) 19-43.

Keller, S., & Price, C. (2014). Beyond Performance: How Great Organizations Build Ultimate Competitive Advantage?,Sadegh, R. Trans, *Tehran: Ariyana Film Publication*, (1) 400.

King, R. K. (2004). Enhancing SWOT analysis using triz and the bipolar conflict graph: a case study on the Microsoft Corporation. *Proceedings of TRIZCON2004, 6th Annual Altshuller Institute*.

Lee, T. R., Hsieh, Y. W., Dadura, A. M., & Wu, J. W. (2011). Applying TRIZ theory for industry development strategies under dynamic environment–the case of Taiwanese Jing-Ming Commercial District A. *International Journal of Value Chain Management*, *5*(1), 25-51.

Malek, A., Dabaghi, A., & Aryanezhad, M. (2011). theoretical bases of gray systems by reviewing uncertainty methods, *Tehran: Termeh express*, (1) 82p.

Mehamedpour, M., & Asgharizadeh, A. (2008). ranking the faculties of a research center by ORESTE. *management research*, 1, 217-233.

Shahabi, R., Basiri, M., Kahag, M., Zonouzi, S. (2014). An ANP-SWOT approach for interdependency analysis and prioritizing the IRAN'S STEEL SCRAP industry strategies. *Resources Policy*, (42)18-26.

Wang, X. P., Zhang, J., & Yang, T. (2014). Hybrid SWOT approach for strategic planning and formulation in China Worldwide Express Mail Service. *Journal of applied research and technology*, *12*(2), 230-238.