Formulating and Ranking Qualitative Strategies and Studying the Five Competitive Forces of Porter in Industrial Organizations

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ABSTRACT

The purpose of this study is linking strategic management and quality management. First, it was studied the five competitive forces of Porter. Then, initial strategies were formulated by SWOT analysis. These strategies were divided in four perspectives of the balanced score card. Then QFD was used which EFQM criteria were as "HOWs / indices" in that and initial strategies were as "WHATs / alternatives" in that too. Finally the initial strategies based on EFQM criteria were ranked by using TOPSIS technique. The statistic societies in this study were 15 experts and statistic sample also were 15. In this study were used 7 questionnaires to gather the data. This method was done in Sepidan mineral water Producer Organization. In this study the main findings are Strategies of Qualitative that satisfy EFQM criteria. The result of this study show that this method formulates Qualitative strategies in organization, and links two areas of strategic management and quality management.

Key words: five competitive forces of Porter, SWOT analysis, balanced scorecard, Quality function deployment, European Foundation for Quality Management (EFQM), TOPSIS

Introduction

A proverb says: if you can't plan, you will plan for defeat. The organizations in the world should study carefully the existing situation with the strategic views and determined their goals by drawing the duties & the insights based on the strength, the weaknesses, the opportunities, the threats in order to respond effectively the society needs & the globalization problems as the operational programs related their needs. In fact the strategic planning is the process of determining the organization goals & making decisions about the comprehensive operational & executive plans to achieve their goals. And in the quality management area, the European improvement model is changed in to a tool for finding the problems in the companies, so the process of self evaluation is performed. This process is a comprehensive systematic method for determining the strengths & the improvable points which are done in short term duration & so the organization can compare itself with the best ones in the international & global class. In fact the European improvement model is caused to gain the suitable understanding of the strong & the weak processes & by evaluating, it's specified that which one of the processes needs improvement, which ones are suitable or in which areas, the organization is improved in comparison with the other organizations. But it's not specified that which areas have the strategic priority or in which areas the actions is caused to the more valuable results to improve the organization function. So the aim of this research is to establish a relationship between the strategic & the quality management & it's going to compile & rank the improved strategies considering the quality criteria.

The first research which was published about the combination of SWOT analysis, the balanced scorecard, the Quality function deployment, as a framework for formulating the strategies by Ko [11]. In his research" applying the balanced scorecard in the quality house", he has stated that combining the balanced scorecard, the SWOT analysis and the Quality function deployment are discussed. So after determining the strategies with aid of SWOT, they are separated in 4 perspectives of the balanced scorecard then they are placed in the quality house of the Quality function deployment as WHATs, on the other hand the Sun Tzu strategies are used as the HOWs to rank the strategies resulted from SWOT based on the Sun Tzu strategies finally
Another research was published by Lee & Ko [14] in which the combination of SWOT analysis, balanced scorecard, Sun Tzu strategies & Quality function deployment was used as a comprehensive framework for Formulating the strategies in banking industry in Hong Kong [10]. Also we can address the other research which was done in the area of the training organizations by Lee & Lo [13] in which the combination of the SWOT analysis, balanced scorecard, Malcolm Baldrige National Quality Award (MBNQA) Education Criteria and quality function deployment was used as a framework for Formulating the strategy in the occupational training organization in Hong Kong [13]. In 2004, the other research with the title of "BSQ strategic formulation framework: A hybrid of balanced scorecard, SWOT analysis and quality function deployment " was published by Ip & Ko. They have stated that in the framework which is provided by Lee & Ko [14], applying the Sun Tzu strategies for Formulating the strategies isn't necessary & instead the Kotler's checklist (which is related to the internal analysis of the organization) was used [4]. They have stated that Lee & Ko [14] have used the concepts such as (the art of Sun Tzu war) in their suggested framework which is the philosophical concepts of the strategy & it's originated from ancient China and basically it has been used for the war fields & the necessity of using these concepts for Formulating the strategy framework is ambiguous & in doubt [4]. So we have suggested a framework in this research in which we have 9 criteria of European improvement model instead of using these ancient concepts for establishing the relationship between the strategies & the quality management. Also the model which is provided by Lee & Ko [14], is used the traditional Quality function deployment which has the qualitative aspects while the suggested framework in this research is tried to make quantitative the Quality function deployment by applying TOPSIS technique. Moreover, the another provided advantage of this model which is considered in this research is that by increasing the capability of formulating the strategy, it was suggested that at first the competitive nature of this industry is studied considering the 5 Porter competitive forces because specifying the industry structure is considered as the starting point for the strategic analysis from the Porter view & the first step is, Formulating the strategy [15]. On the other hand the experiences of the most European companies such as "Siemens communication company, Inland Revenue, Swedish custom company, Northern Ireland Electricity Company, Royal Sun Alliance, Royal Dutch Philips, and Yale" have shown that because of pure attention to the quality improvement, the organizations are faced with the problems. The managers of these companies are concerned because of the amounts of the spent resources & the high volume of the performed actions in the process of self evaluation of the European improvement model. It seems that their European improvement model is so time consuming & bureaucratic & it had a complex language. One of the other problems of these companies is that, the relationship between the strategic management & the quality improvement activities wasn't established which was caused that the managers were faced with many improvement projects without the priority. These sentences shows the managers of Inland Revenue company opinions about this issue: "we are considering many actions for improving the quality, but we don't have qualitative comprehensive strategy. The actions which have done, are effective but it is unknown where we want to reach. We have been used the European improvement model last years, but this year we won't use it. We need a change, a change from the continuous improvement towards determining the basic issues for improvement." Although some of the managers believed that using this model was caused to improve the relations, planning & the more staffs partnerships, but the evidences don't show any general improvement in the occupation & job areas [5]. Considering the above cases the aim of this research is to establish a relationship between the strategic & the quality management & it's going to compile & rank the improved strategies in relation with the qualification criteria. In this research 9 criteria of the European improvement model is used as the criteria for formulating the strategies to establish a relation between the quality & the strategic management. This research is tried to make quantitative the Quality function deployment by applying TOPSIS technique & this technique is used for ranking the strategies also at first the competitive nature of this industry was studied considering the 5 Porter competitive forces to increase the ability of formulating the strategy.

This research is going to answer these questions:

The main question of the research:
1. How is the operational priority of each of these strategies in Sepidan mineral water company?

The secondary questions:
1. How is the competitive nature of the mineral water production company?
2. How are the first strategies compiled in the Sepidan mineral water company?
3. How are the strategies separated in 4 perspectives of balanced scorecard?
4. How are the strategies scored based on the 9 criteria of European improvement model?
5. How are the strategies ranked?

Materials and Methods

5 Porter competitive forces: maybe we can say that the Porter competitive model is the most famous & effective and efficient method for Formulating the strategies which is emphasized on the following issues:
The competitive situation & the high sensitivity about the entrance & the existence of the potential competitors in the market which is caused to decrease market share.

The relationship among the effective forces on the organization competitive function.

Because the variation of the products of the potential & actual competitors, the market share and also their flexibility in the production have the main role to capture the market, the managers should understand the competitive forces clearly to have the effective organization strategies & to respond them consistently. The major elements which are surrounded the organization & (are) influenced it, are as follows:

1. The threat of substitute products becoming available in the market.
2. The threats resulted from entering new competitors & attempts for proceeding from each other in the area of the considered profession.
3. The suppliers power for imposing their requests to the organization.
4. The buyers & the customers power for imposing their requests to the organization.
5. The intensity of the competition among the existing competitors.

All of the mentioned items, are determined the competition level of the organization. So the strategies should be compiled which have the quality of confrontation with each of these elements themselves.

SWOT analysis: SWOT is the abbreviation of the strengths, the weaknesses, the opportunities, and the threats. The analysis & the examination of SWOT is determined the goals of one company or projects & the internal & external factors which are desired or undesired for achieving the goals. SWOT is maximized the strengths & the opportunities & is minimized the weaknesses & the threats. In other word it is converted the weaknesses to the strengths & the threats to the opportunities [3]. SWOT is one of the strategic tools for conforming the inter organizational strengths & weaknesses with the opportunities & the threats which are happened out of the organization which is provided the systematic analysis for determining these factors & Formulating the strategies which are formed the best conformity & we can provide 4 kinds of these strategies (SO,WO,ST,WT) by conforming and comparing these factors. Although the advantage of this technique is its simplicity but it has some disadvantages, for example selecting the strategies is not supported by a quantitative method after the analysis & the examination of the organization internal & external factors & mostly selecting the strategies is based on the qualitative examination & the analysis & the facilities & the experiences of the attendants in the process of the examination & the analysis. Many attempts have done to develop SWOT by quantitative methods such as giving weights & ranking internal & external factors [16]. So in this research for removing this weakness, after the analysis & the examination of the internal & external factors in the organization, TOPSIS quantitative method was used for ranking the strategies.

Balanced scorecard: Robert Kaplan & David Norton have introduced a research about the methods & the function criteria for assessing the functions of 12 better American companies in 1990. The result of this research has shown that most of the successful organizations, are determined their strategic goals in 4 categories: financial, the customer, the processes and the growth & learning & they are evaluated their functions from these 4 views. They have published an article in Harvard magazine in 1992 & they have introduced their symmetrical as a modern management tool for evaluating their functions [8]. Then this card has developed as a tool for Formulating the strategies & performing them in the organization [6,7]. In other word this card is more than a scoring system & in fact it is a management model which is helped the organization for effective forming of the goals based on the strategies which are accessible & it can evaluate the results. This card is helped the manager to have a comprehensive & alternate understanding of performing & functioning the strategies effectively with the aim of achieving the organization goals [17]. So about the evolitional process of this card development we can add that this method was used as a method for evaluating the functions & then it was as a tool for achieving the strategies & now it is determined as a strategic management control system. This card is evaluated the organization function from 4 aspects including financial, the customer, the internal processes & the growth & learning. Evaluating financial & non financial aspects, is provided a common language for helping superior (higher) managers & staffs to move towards insight & the organization perspective [19].

Quality function deployment (QFD): it was existed by professor Akao, in the late of 1960s & in the early of 1970s in Japan [18]. It is a systematic & analytic system for achieving customers requests. Using QFD, the organizations can convert the customers voice to the rule & the instructions for planning production. They can change the production processes & the future planning. But today the organizations are used QFD successfully as a powerful tool which is showed the operational & the strategic decisions in the organization [20]. In addition to the various advantages of QFD, it has also disadvantages for example it is a qualitative method & because of these disadvantages, using new methods & approaches in QFD are needed & it leads to integrate QFD with other techniques such as fuzzy logic, artificial neural networks (ANN) & Taguchi method [1] or partovi has combined AHP...
with QFD in order to assist in project selection, they have called it "AHP-QFD" method [20]. This research is combined QFD with TOPSIS technique to increase QFD functions & this technique is used a tool for making quantitative relations between the reasons HOWs & WHATs.

The European Foundation for Quality Management (EFQM): the improvement model; is a management structure which is prepared the causes of development & improvement by relying on the bases & the basic concepts, considering to the basic criteria of the comprehensive quality management & self evaluating system. It's a tool for assessing the level of the system settlement in the organization, self evaluating, guiding which is determined and specified the activity paths for the managers to improve the function. So the main message of this model is to focus on answering these 2 questions: how is this model determined as a logical & proper management structure, who have main roles in this chain of connections & interactions? The first level of this model the general goals, & in the next level these general goals are converted and analyzed to the qualitative & measurable degrees & the scales. EFQM model is based on 9 criteria and 5 of them are enablers & the remaining 4 are the results criteria. The enablers are covered whatever the organization is done, the results criteria are covered whatever the organization is gained. The enablers criteria include: 1. Leadership. 2. The guideline & the strategy. 3. The organization is gained. The enablers criteria include: 1. Leadership. 2. The guideline & the strategy. 3. The organization is gained.

The result criteria: 1. The customer results. 2. The staff's results. 3. The society results. 4. The key results of the function.

TOPSIS (Technique for Order-Preference by Similarity to Ideal Solution): Youn & Howang are provided a technique for the best suggestion of the common solution of the ideal solution. It means that selecting alternative should have the shortest distance of the ideal solution & at the same time it should have the furthest distance of the negative ideal solution. The steps of this model are as follows:

Step 1: normalizing the decision matrix, Step 2: forming the weighty without scale matrix by supposing (W) vector as an entrance, Step 3: determining the ideal & the negative solutions, Step 4: evaluating the value of the distance, Step 5: evaluating the relative nearness of A, of the ideal solution, Step 6: ranking the items based on descending order ci+.

This research is performed in 7 steps:

Stage 1: study the competitive nature in the mineral water industry based on 5 Porter competitive factors.

Stage 2: the organization duty & perspective is specified. The duty of an organization is determined the lines of the business & the work. This perspective is showed that the organization is formed what kind of pictures of itself in the beneficiaries minds in the area in which it wants to work.

Stage 3: Formulating the first strategies by the SWOT analysis.

Stage 4: separating the compiled strategies of the previous stage in 4 perspectives of the balanced scorecard. Kaplan & Norton have pointed out that the first for achieving the balanced scorecard, is to explain the company insight & the strategies [6]. So analyzing the SWOT for Formulating the strategies with the balanced scorecard characteristics, is the first step for real achievement of the balanced scorecard and it is prevented from pure attention to some of the common & usual strategies also the organization can balance its strengths against its competitive weaknesses by combining the SWOT analysis and the balanced scorecard and it can reinforce its opportunities in the market.

Stage 5: placing the first separated strategies in 4 perspectives of the balanced scorecard in the table of the Quality function deployment as "WHATs".

Stage 6: placing 9 criteria of the European improvement model in the table of the Quality function deployment as "HOWs".

Stage 7: ranking the strategies with the aid of TOPSIS method.

Now considering the above explanations the research framework is shown in figure (1):

<table>
<thead>
<tr>
<th>the strategies of the rank</th>
<th>9 criteria of the EFQM</th>
<th>HOWs</th>
<th>WHATs</th>
</tr>
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<tbody>
<tr>
<td>the study of the relationship between WHATs &amp; HOWs by applying TOPSIS technique</td>
<td>the first strategies resulted from the matrix of SWOT</td>
<td></td>
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</tbody>
</table>

Fig. 1: the research framework

The methodology: the research method is, finding the bases which consists of: explanation, converting & discovering the events & in order for giving sense to the different aspects of collected data. Considering the type of research methods, collecting data is done by the field research & the library research. So the collecting data tools are the questionnaires & the interviews. The studied population (Sepidan company which produces mineral mater) is one of the most famous companies in the mineral water industry & is one of the first mineral water companies in south of the country (Iran) & it has the regular organizational structure with the powerful management. The examined statistical population are the experts which have opinions for the strategic management and at the
same time they have powers & influences & decision making powers in the organization. They are 15 experts in this research in fact the number of the statistical sample & the statistical population is the same & they are 15 persons.

Results:

Threat of new entrants: the experts statements show that the threat of new entrants to the mineral water production industry is the average. But at the same time they have stated that nowadays the factor of supplying the first material of plastic bottles (PET) is becoming the first challenges for this industry & because of the low supply of this material (PET) in the stock market of the goods, the activists of this industry are faced with the crisis & at the same time the price of this first material is increased also & besides these 2 factors, the other factors such as the crisis in the import of the machineries & the spare equipment & the increase of the currency price is caused that the tendency towards entering this industry is decreased below the average in these recent years especially in 2011 & 2012. Also the experts have stated that today the companies & the production units are faced with the limitation of supplying financial resources & the production expenses are grew about 30% maximally in the first 3 months in 2012 & observing these factors is decreased each capitalist tendency towards entering this industry. So that the threat of new entrants has descending order. The intensity of the competition among the existing competitors: we can analyze this issue and the result of this analysis shows that the competition intensity is high among the existing competitors in the mineral water production industry. Damavand company has 30% of the mineral water market & more than 80% other mineral water companies are competing to gain the high share of remaining 70% in the market & among them the companies such as Polur,vata, Sheshpir, Sepidan, Anahita, Kouhrang, are competing with each other highly.

The bargaining power of the buyers: the analysis of the bargaining power of the buyers in relation with generated products of this industry is that the bargaining power of the buyers is the average in the mineral water production industry, but recently various buyers rumors about the mineral water are converted the mineral water market in to a challenging market. In fact the experts & the experts of this industry have stated that the public relation & the culture of the response & the customer focus are ineffective in the mineral water companies and lack of transparency is caused lack of trust of the people & this market is converted to a very sensitive market in Iran so that they believed that the greatest mistake in Iran market is that we don't respond the rumors & in fact we should be responsible & respond every day quickly & immediately. So recently the factor of the rumors in the market of this industry & the lack of transparency in behalf of the mineral water companies are added to the bargaining power of the buyers.

The bargaining power of the suppliers: it's related to the suppliers of the raw materials, we can analyze that because the raw materials of mineral water are depended to the petrochemical industry & the price of the petrochemical products for example the price of the raw materials of the bottles, is increased intensively which is caused to increase the bargaining power of the suppliers of the raw materials, at the same time it is interesting to mention that the bargaining power of the suppliers of the raw materials is increased in 2012 compared with previous years because the petrochemical units is selling (giving) this material to the merchants because of the increasing the currency rate instead of the (PET) in the commodity exchange to expert it so the suppliers can be made more profits & they are prevented from supplying this material to the commodity exchange & because the petrochemical commercial company also can't provide this material to the commodity exchange sufficiently, the activists of this industry are faced with the crisis & the intensive decreasing of this material is caused that its price is reached to its maximum so that the experts of this industry believe that if this process isn't stopped, the activity of the most mineral water production unites will be impossible. The mentioned cases show the high power of the raw materials suppliers in the mineral water industry.

The capital goods suppliers: these commodities can be classified in 2 general groups: the first group includes the machineries & the equipment which are used for production. The suppliers of these facilities & equipment are mainly the companies of these countries: Germany, France, Italy, Poland, South Korea, Japan & China. Of course because most of the mineral water companies are imported their machineries from China, they can overcome the pressure resulted from the boycott to some extent but at the same time some of the big mineral water companies are faced with the problem of supplying the devices because they are used the European machineries especially the ones which are made in Germany & because of the boycott & it's caused to increase the bargaining power of theses European supplying companies. The other group of these commodities are the warehousing, accounting & the operational management software's which have the considerable roles in controlling the entrance & the existence of the materials & commodities, also in facilitating the operations of the company, because the number of these commodities suppliers is great. Even there isn't a significant difference among the provided products & the industry is under less pressure & the especial threat isn't felt in behalf of this factor.
The pressure resulted from the substitute products: the existing companies in an industry are widely competed with the industries which are produced the substitute products. The substitute products are limited the potential efficiency of industry by creating a roof (upper part) for the products prices which are determined by the companies with the aim of making profit. If the substitute commodities prices are more suitable, the produced limitations will be more stable in the profits of the industry. The experts have stated that there are many commodities to compete with other ones in this industry so the pressure resulted from the substitute commodities are high. Most of the drinks such as the products of the industries which produce beverage & yoghurt, the products of the industry which produce juice, are the most powerful competitors for the mineral water production industry which can be substituted the mineral water by the customers. So the competition is intensified & the pressures resulted from this competition are increased.

The analysis of 5 Porter competitive forces in the mineral water production industry: according the Porter analysis of the 5 forces, we can say that the Sepidan mineral water company works in the industry in which the bargaining power of the buyers is the average in relation with the generated products of this company but the rumors & the lack of transparency in behalf of the mineral water companies is increased the bargaining power of the buyers. The bargaining power of the suppliers especially the suppliers of the raw materials is so high (great) & they are pressed the company of this area. Also the power of new entrants threat is the average because of the addressed reasons & it is decreased. In relation with the competition intensity among the existing competitors in this industry, we can say that Sepidan Mineral Water Company works in the industry in which the competition is high among the competitors. So the company should encourage its research & development units to produce new & various products by emphasizing on the innovation & allocating budget & at the same time it shouldn't neglect the activities for increasing the sale but it should record its brand in the minds by increasing the budget of the activities for promoting the sale & it should encourage the customers to buy the company products by focus on its competitive advantages compared with the other competitors & it should satisfy the customers. In other word it is suggested that Sepidan mineral water company not only can keep its share in the market but also it can improve it by using the penetration strategy in the market & increasing the promoting activities & developing the sale agencies. Also by using the strategy of developing the products. But in relation with the substitute commodities, because of the redundancy of the substituent commodities, the threat of these commodities is high so Sepidan mineral water company should start to advertise comprehensively in relation with the usefulness of the mineral water compared with the substituent products such as soda which is harmful for the general health. In better word this company should attempt to improve the culture of drinking mineral water & this should be one of its main strategies.

The government, an effective force in the mineral water industry competition: the main challenge with which the mineral water industry had been faced till the late of 2011 was the lack of increasing the price of this product by the pricing administrators. The government hasn't been let the companies increase the price of the mineral water & in recent 3 years the price of the mineral water has been always the same. The expenses have been increased in the mineral water industry during these 3 years so that the price of the raw materials for producing the bottle of the mineral water has been increased 87% during these 3 years also the transportation expenses which is the main factor of the mineral water industry expenses, is increased 35% but the price of the mineral water has been constant during these 3 years. Finally the country mineral water market has been oscillated till May of 2012 because of the inflation & the price of the mineral water was increased more than 40%. Although increasing the prices in 2012 this year the mineral water industry is faced with another great problem which is the decrease of supplying the raw bottle materials by its producers & because the petrochemical commercial company can't supply this material to the commodity exchange sufficiently this industry is faced with the crisis also the decrease of supplying this raw material is caused to increase its price intensively & the margin of these companies profit is decreased & now the mineral water production market isn't profitable in Iran so that according the speech of these companies owners, this industry is so expensive. Based on the statistics of the ministry of the industry & the mines, 125 companies is producing mineral water in the country but some of them are faced with the problems because of the lack of the funding & now there are 90 active units. Anyway these cases show that the government is an effective force of the mineral water industry competition by strictness on the fixing the mineral water price & is added to the pressures resulted from the competition in this industry.

Formulating the first strategies of Sepidan mineral water company: in this stage the first strategies are formulated for the company by forming the matrix of SWOT which they are seen in 4 kinds of the strategies WT, WO, ST, SO. The results of this stage are shown in figure (2). The strategies are separated in 4 perspectives of the balanced scorecard after Formulating the first strategies. Then the resulted strategies from the matrix of SWOT which are separated in the 4 perspectives of the balanced scorecard, are combined with QFD & placed in the
matrix of QFD matrix house as "WHATs" & 9 criteria of EFQM model are placed in the quality house as "HOWs" & then the relationship between the criteria of the improvement model & the strategies was determined by using the experts poll during a Brainstorming session, the scoring mechanism also is according to the scoring methodology provided by Lee & Ko [14] & the score of the most relationship is 9, the score of the average relationship is 3 & the score of the poor relationship is 1 & if there is no relationship, the score will be 0 & the obtained result is shown in table (1). The sum of the scores of each column & row is seen at the end of the table. The percentages which are located at the end of each row is shown the importance of the strategies in 4 perspectives of the balanced scorecard against the criteria of the European improvement model & the numbers which are located at the end of each column is shown the importance of these criteria against the strategies of the organization. As it was shown in table (2) these criteria: the guideline & the strategy, the key results of the function, the customer results, the resources & the partnerships have had the most (highest) scores. The data of this part will use to rank the strategies in the next step.

<table>
<thead>
<tr>
<th>The weaknesses:</th>
<th>The strengths:</th>
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<tr>
<td>1. lack of the regular training &amp; explanatory seminars for the staffs &amp; the managers</td>
<td>1. the high management ability</td>
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<tr>
<td>2. the poor public relations or lack of the responding (response) culture &amp; the customer focus &amp; lack of transparency</td>
<td>2. the increase of the market share (portion) of the company in the market of south of the country</td>
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<tr>
<td>3. the poor advertisements</td>
<td>3. the popularity of the brand of Sepidan mineral water in the country &amp; the Arabic countries</td>
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<td>4. the weak organizational structure to train the managers</td>
<td>4. the company high experience to produce mineral water</td>
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<td>5. the absence of the mineral water import to the country</td>
<td>5. the powerful distribution canals</td>
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<td>6. the absence of the mineral water in the organizations</td>
<td>6. the powerful sale circle</td>
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<tr>
<td>7. the activeness of the research &amp; development part</td>
<td>7. the powerfullness of the quality control department (part)</td>
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<td>8. the high quality of the company mineral water</td>
<td>8. the activeness of the research &amp; development part</td>
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<tr>
<td>9. the relative (proportional) good liquidity of the company</td>
<td>9. having the advanced machineries for production</td>
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<tr>
<td>10. the additional production capability</td>
<td>10. the high quality of the company mineral water</td>
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<tr>
<th>The opportunities:</th>
<th>The strategies (SO):</th>
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<tr>
<td>1. the growth of 10-15% of the mineral water market of the country</td>
<td>1. converting the Sepidan brand to a national brand $C(S_1,S_2,S_3,S_6,S_7,O_1,O_8)$</td>
</tr>
<tr>
<td>2. the presence of the Arabic countries markets</td>
<td>2. increasing the amount of the recent products production $l(S_8,S_9,O_1,O_2,O_5,O_8)$</td>
</tr>
<tr>
<td>3. increasing the awareness of the harms (disadvantages) of beverage &amp; the forbid (inhibition) of using (drinking) it in the organizations</td>
<td>3. increasing the sales agencies (representations) throughout the country especially south of the country $C(S_2,S_3,S_6,O_1,O_8)$</td>
</tr>
<tr>
<td>4. the absence of the mineral water import to the country</td>
<td>4. increasing the export to the markets of the Arabic countries $C(S_1,S_2,S_3,S_6,S_7,O_1,O_8)$</td>
</tr>
<tr>
<td>5. the old refinement houses for supplying the drinking water &amp; the various government problems to supply the water</td>
<td>5. attempts for establishing the powerful environmental interactions especially with the ministry of petroleum, the industry &amp; the mines &amp; the banks $L(S_1,O_9)$</td>
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<tr>
<td>6. the increase of the rewards &amp; the export exemption in behalf of the government</td>
<td>6. the old refinement houses for supplying the drinking water &amp; the various government problems to supply the water</td>
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<tr>
<td>7. the advance of the technology &amp; the new technology</td>
<td>7. the increase of the request because of the additional awareness of the people about the usefulness of the mineral water for the health</td>
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<tr>
<td>8. the increase of the request because of the additional awareness of the people about the usefulness of the mineral water for the health</td>
<td>9. paying attention to the customer as a base in the modern world</td>
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<td>10. granting (giving) the credits with low profit in behalf of the government</td>
<td>10. granting (giving) the credits with low profit in behalf of the government</td>
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<table>
<thead>
<tr>
<th>The threats:</th>
<th>The strategies (ST):</th>
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<tr>
<td>1. decreasing the power of shopping among the society people</td>
<td>1. producing new products to attract the new customers specially flavored water,</td>
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<tr>
<td>2. decreasing the time of maintaining</td>
<td>2. increasing the amount of the advertisements by focus on the informing the quality of the $C(W_1,T_1,T_2,T_3,T_4,T_5)$</td>
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<tr>
<th>The strategies (WO):</th>
<th>The strategies (WT):</th>
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<tr>
<td>1. cooperation with the certified scientific centers such as the research &amp; the medical centers &amp; the universities to increase the qualitative level of the product &amp; the staffs skills $L(W_1,W_4,O_7,O_9)$</td>
<td>1. cooperation with the certified scientific centers such as the research &amp; the medical centers &amp; the universities to increase the qualitative level of the product &amp; the staffs skills $L(W_1,W_4,O_7,O_9)$</td>
</tr>
<tr>
<td>2. the customer focus &amp; teaching it to the staffs specially the marketing &amp; the sale staffs $C(W_2,O_9)$</td>
<td>2. the customer focus &amp; teaching it to the staffs specially the marketing &amp; the sale staffs $C(W_2,O_9)$</td>
</tr>
</tbody>
</table>
mineral water by the ministry of health in the country compared with the other parts of the world.  
3. the strictness with keeping the same (fixing the) prices of the mineral water by the government  
4. the expensive industry & intensive decrease of its profit margins  
5. the government policies for increasing the income & the salary  
6. the various rumors & negative news about the mineral water  
7. having 30% of the country market share (portion) by Damavand mineral water company  
8. the less loyalty of the customers in relation with the different mineral water brands  
9. the various substitute products for the company products  
10. the crisis of the importing the machineries & the spare tools  
11. the intensive increase of the raw material price  
12. the intensive decrease of the supply of the bottle raw materials by the suppliers  
13. the increase of the currency rate  
14. the intensive competition among the competitors  
15. the low per capita consumption of the mineral water in the country

1. forming the telephone centers (units) to hear the customer voice & the continuous study about the customers & his/her subjectivity & attempts for explaining & trust making, C(W2,T3)  
4. designing & using the slogans & the colors consistent with the different seasons of the year in the products labels, I(W3,T7,T15)

Fig. 2: the SWOT analysis matrix

Table 1: the relationship between the strategies & the criteria (EFQM) by the model of the quality house of (QFD)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Key Function</th>
<th>Leadership &amp; Top Management</th>
<th>The Staffs</th>
<th>The Society</th>
<th>The Resources &amp; Partnerships</th>
<th>The Processes</th>
<th>The Customer</th>
<th>The Key Function</th>
<th>Score</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1: controlling the expenses &amp; using the strategy to manage them</td>
<td>enriched water, I(S6,S7,S10,T5,Y9,T15,T16)</td>
<td>2. buying excessive required raw materials &amp; the necessary equipment &amp; storing them, I(S2,S11,T6,T11,T12,T13,T14).</td>
<td>3. producing the mineral water with new package as a book which can be placed (mounted) on the belt &amp; easily portable for the athletes &amp; also producing the 300 cc bottles for the children &amp; using at the schools, I(S9,S10,T5,T15,T16)</td>
<td>4. the culture solutions for increasing the per capita mineral water consumption in the country, C(S6,S7,T6,T16)</td>
<td>5. developing the relations with the other competitors &amp; reinforcing the mineral water producers association &amp; interfering in the law makings, I(S1,S2,T2,T3,T5)</td>
<td>6. controlling the expenses &amp; using the strategy to manage them, F1(S1,T6,T15,T16)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>C1: converting Sepidan brand to a national brand</td>
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<td>C2: increasing the sale agencies throughout the country especially in the south of it</td>
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<tr>
<td>C3: increasing the export to the Arabic countries markets</td>
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<tr>
<td>C4: the culture solutions to increase the per capita mineral water consumption in the country</td>
<td></td>
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<tr>
<td>C5: the customer focus &amp; teaching it to the staffs especially the sale &amp; marketing personnel</td>
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<tr>
<td>C6: increasing the amount of the advertisements by focus on informing the quality of the product</td>
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<tr>
<td>C7: forming the telephone units to hear the voice of the customers &amp; the</td>
<td></td>
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</table>
continuous study of the customer & his/her subjectivity & attempts for explaining & trust making

C: forming the campaigns in the different seasons of the year with the slogans consistent with the season & acknowledging the better salespersons

<table>
<thead>
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</table>

I: increasing the amount of producing recent products

<table>
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<td>9</td>
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</table>

I: producing new products to attract new customers especially flavored water, enriched water

<table>
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I: buying excessive required raw material & necessary equipment & storing them

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</table>

I: producing mineral water with the new package as a book which can be placed on the belt & easily portable for the athletes also producing 300cc bottles for the children & using at schools

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I: developing the relations with the other competitors & reinforcing the mineral water producers association & interfering in law making

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I: outsourcing

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<td>36</td>
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I: designing & using the different slogans & colors consistent with different seasons of the year in the products labels

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I: attempts for establishing the powerful environmental relationships especially with the ministries of the petroleum, the industry & the mines & the banks

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</tbody>
</table>

I: cooperation with the scientific certified centers such as the research & the medical centers & the universities to increase the qualitative products level & the staffs skills

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<td>3</td>
<td>37</td>
<td>4.7</td>
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<td>91</td>
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<td>26</td>
<td>120</td>
<td>786</td>
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</tbody>
</table>

Ranking the strategies by using TOPSIS: among the different multi criteria decision making methods, was considered for ranking the strategies because the weights of EFQM criteria which are shown in table (2), are fixed in the European quality organization. We should mention that in the TOPSIS method, double scoring is not needed to determine the weight & it is considered as a fixed data of the problem. In this stage, the strategies which were the options of the TOPSIS method have ranked based considering the criteria of EFQM model which was accounted the TOPSIS indexes.
Step (1): normalizing the decision matrix: this process tries to make without the scale the existing scales of the decision matrix which are the same relationship between the strategies & the criteria of EFQM model & is shown in table (1). So each of these values were divided in to the size of the vector which is related to the same index. Each $r_{ij}$ element of the matrix of the normalized decision of $N_D$ was resulted from the formula (1) & the obtained result from this stage is shown in table (3).

$$r_{ij} = \frac{X_{ij}}{\sqrt{\sum_{i=1}^{m} X_{ij}^2}}$$  \hspace{1cm} (1)

Step (2): forming the weighty without scale Matrix which was resulted by using formula (2) & the result is shown in table (4) (by supposing the vector $(W)$ as an entrance).

$$V = N_D \cdot W_{n \times m} = \begin{bmatrix} V_{11} & \ldots & V_{1n} \\ \vdots & \ddots & \vdots \\ V_{m1} & \ldots & V_{mn} \end{bmatrix}$$  \hspace{1cm} (2)

$W^\prime = \{ w_1,w_2,\ldots, w_n \}$  \hspace{1cm} (supposed from DM)

$W = \{0/1,0/08,0/09,0/09,0/09,0/14,0/2,0/09,0/09,0/06,0/15\}$

---

Table 2: the weight of the EFQM criteria

<table>
<thead>
<tr>
<th>the indexes (9 criteria of EFQM)</th>
<th>the weight of the indexes</th>
</tr>
</thead>
<tbody>
<tr>
<td>leadership</td>
<td>0/1</td>
</tr>
<tr>
<td>the guideline &amp; the strategies</td>
<td>0/08</td>
</tr>
<tr>
<td>the staffs</td>
<td>0/09</td>
</tr>
<tr>
<td>the resources &amp; the partnerships</td>
<td>0/09</td>
</tr>
<tr>
<td>the processes</td>
<td>0/14</td>
</tr>
<tr>
<td>the customer results</td>
<td>0/2</td>
</tr>
<tr>
<td>the staffs results</td>
<td>0/09</td>
</tr>
<tr>
<td>the society results</td>
<td>0/06</td>
</tr>
<tr>
<td>the key results of the function</td>
<td>0/15</td>
</tr>
</tbody>
</table>

---

Table 3: the matrix of the normalized decision of $N_D$ (the normalize of the score of the relationship between the strategies & the criteria of EFQM)

<table>
<thead>
<tr>
<th></th>
<th>the guideline &amp; the strategies</th>
<th>the staffs</th>
<th>the resources &amp; the partnerships</th>
<th>the processes</th>
<th>the customer results</th>
<th>the staffs results</th>
<th>the society results</th>
<th>the key results of the function</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_1$: controlling the expenses &amp; using the strategy to manage them</td>
<td>0.348</td>
<td>0.255</td>
<td>0.174</td>
<td>0.101</td>
<td>0.133</td>
<td>0.101</td>
<td>0.381</td>
<td>0</td>
</tr>
<tr>
<td>$C_1$: converting Sepidan brand to a national brand</td>
<td>0.348</td>
<td>0.255</td>
<td>0.174</td>
<td>0.304</td>
<td>0.34</td>
<td>0.304</td>
<td>0.381</td>
<td>0</td>
</tr>
<tr>
<td>$C_2$: increasing the sale agencies throughout the country especially in the south of it</td>
<td>0.116</td>
<td>0.255</td>
<td>0.058</td>
<td>0.304</td>
<td>0.037</td>
<td>0.304</td>
<td>0</td>
<td>0.069</td>
</tr>
<tr>
<td>$C_3$: increasing the export to the Arabic countries markets</td>
<td>0.116</td>
<td>0.255</td>
<td>0.058</td>
<td>0.304</td>
<td>0.037</td>
<td>0.304</td>
<td>0.127</td>
<td>0</td>
</tr>
<tr>
<td>$C_4$: the culture solutions to increase the per capita mineral water consumption in the country</td>
<td>0.348</td>
<td>0.255</td>
<td>0.058</td>
<td>0.101</td>
<td>0.133</td>
<td>0.304</td>
<td>0</td>
<td>0.627</td>
</tr>
<tr>
<td>$C_5$: the customer focus &amp; teaching it to the staffs especially the sale &amp; marketing personnel</td>
<td>0.348</td>
<td>0.255</td>
<td>0.524</td>
<td>0.101</td>
<td>0.34</td>
<td>0.304</td>
<td>0.381</td>
<td>0</td>
</tr>
<tr>
<td>$C_6$: increasing the amount of the advertisements by focus on informing the quality of the product</td>
<td>0.348</td>
<td>0.255</td>
<td>0.058</td>
<td>0.101</td>
<td>0.34</td>
<td>0.304</td>
<td>0.127</td>
<td>0</td>
</tr>
<tr>
<td>$C_7$: forming the telephone units to hear the voice of the customers &amp; the continuous study of the customer &amp; his/her subjectivity &amp; attempts for explaining &amp; trust making</td>
<td>0.116</td>
<td>0.255</td>
<td>0.174</td>
<td>0.101</td>
<td>0.34</td>
<td>0.304</td>
<td>0.381</td>
<td>0.627</td>
</tr>
<tr>
<td>$C_8$: forming the campaigns in the different seasons of the year with the slogans consistent with the season &amp; acknowledging the better salespersons</td>
<td>0.116</td>
<td>0.085</td>
<td>0.524</td>
<td>0</td>
<td>0.133</td>
<td>0.101</td>
<td>0.381</td>
<td>0</td>
</tr>
<tr>
<td>$I_2$: increasing the amount of producing recent products</td>
<td>0.116</td>
<td>0.255</td>
<td>0.058</td>
<td>0.304</td>
<td>0.34</td>
<td>0.101</td>
<td>0.127</td>
<td>0</td>
</tr>
<tr>
<td>$I_3$: producing new products to attract new customers especially flavored water, enriched water</td>
<td>0.116</td>
<td>0.255</td>
<td>0.174</td>
<td>0.304</td>
<td>0.34</td>
<td>0.304</td>
<td>0.127</td>
<td>0.069</td>
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</tbody>
</table>
The obtained result is shown in Table (5). The negative ideal was resulted from formulas (3) & (4) & the obtained result is shown in Table (5).
Table 5: the options distance of the positive ideal & the negative ideal

<table>
<thead>
<tr>
<th>the strategies</th>
<th>$d^+_i$</th>
<th>$d^-_i$</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>0/07365</td>
<td>0/06003</td>
</tr>
<tr>
<td>C1</td>
<td>0/040443</td>
<td>0/0953936</td>
</tr>
<tr>
<td>C2</td>
<td>0/07373</td>
<td>0/0812296</td>
</tr>
<tr>
<td>C3</td>
<td>0/065049</td>
<td>0/0869379</td>
</tr>
<tr>
<td>C4</td>
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<td>0/074354</td>
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<td>C5</td>
<td>0/038427</td>
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<td>0/064109</td>
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<td>I1</td>
<td>0/076477</td>
<td>0/06624</td>
</tr>
<tr>
<td>I2</td>
<td>0/0564805</td>
<td>0/085882</td>
</tr>
<tr>
<td>I3</td>
<td>0/089623</td>
<td>0/048075</td>
</tr>
<tr>
<td>I4</td>
<td>0/062905</td>
<td>0/084502</td>
</tr>
<tr>
<td>I5</td>
<td>0/094835</td>
<td>0/051037</td>
</tr>
<tr>
<td>I6</td>
<td>0/0774778</td>
<td>0/69248</td>
</tr>
<tr>
<td>I7</td>
<td>0/07510239</td>
<td>0/0612911</td>
</tr>
<tr>
<td>L1</td>
<td>0/074996</td>
<td>0/073095</td>
</tr>
<tr>
<td>L2</td>
<td>0/06816039</td>
<td>0/07709</td>
</tr>
</tbody>
</table>

Step (5): Evaluating the relative distance of the $A_i$ option of (to) the ideal solution which was evaluated by formula (5) & the obtained result is shown in table (6).

$$c_{i+} = \frac{d_{i+}}{(d_{i+} + d_{i-})} \leq c_{i+} \leq 1; i = 1,2,\ldots,m$$

(5)

Step (6): Finally the strategies were ranked based on the descending order of $c_{i+}$, which is shown in table (7).

Table 6: Evaluating the relative nearness of the option ($A_i$) of the ideal solution

<table>
<thead>
<tr>
<th>the strategies in 4 perspectives of balanced scorecard</th>
<th>$c_{i+}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>F$_1$: controlling the expenses &amp; using the strategy to manage them</td>
<td>0/44905</td>
</tr>
<tr>
<td>C$_1$: converting Sepidan brand to a national brand</td>
<td>0/70226</td>
</tr>
<tr>
<td>C$_2$: increasing the sale agencies throughout the country especially south of it</td>
<td>0/52419</td>
</tr>
<tr>
<td>C$_3$: increasing the export to the Arabic countries markets</td>
<td>0/572</td>
</tr>
<tr>
<td>C$_4$: the culture solutions to increase the per capita mineral water consumption in the country</td>
<td>0/50732</td>
</tr>
<tr>
<td>C$_5$: the customer focus &amp; teaching it to the staffs especially the sale &amp; the marketing personnel</td>
<td>0/72502</td>
</tr>
<tr>
<td>C$_6$: increasing the amount of the advertisements by the focus on informing the quality of the product</td>
<td>0/55359</td>
</tr>
<tr>
<td>C$_7$: forming the telephone centers to hear the customer voice &amp; the continuous study about his/her subjectivity &amp; attempts for explaining &amp; trust making</td>
<td>0/63571</td>
</tr>
<tr>
<td>C$_8$: performing the campaigns in the different seasons of the year with the slogans consistent with season &amp; acknowledging the better salespersons</td>
<td>0/46323</td>
</tr>
<tr>
<td>I$_1$: increasing the amount of producing the recent products</td>
<td>0/46413</td>
</tr>
<tr>
<td>I$_2$: producing the new products to attract new customers especially flavored water &amp; enriched water</td>
<td>0/60326</td>
</tr>
<tr>
<td>I$_3$: buying excessive raw materials &amp; the required equipment &amp; storing them</td>
<td>0/34913</td>
</tr>
<tr>
<td>I$_4$: producing mineral water in with a new package as a book which can be placed on the belt &amp; easily portable for the athletes also producing 300cc bottles for the children &amp; using at schools</td>
<td>0/57325</td>
</tr>
<tr>
<td>I$_5$: developing the relations with the other competitors &amp; reinforcing the mineral water producers association &amp; interfering in the law makings</td>
<td>0/034987</td>
</tr>
<tr>
<td>I$_6$: outsourcing</td>
<td>0/47195</td>
</tr>
<tr>
<td>I$_7$: designing &amp; using the slogans &amp; the colors consistent with the different seasons of the year in the products labels</td>
<td>0/44936</td>
</tr>
<tr>
<td>I$_8$: attempts for establishing the powerful environmental relations especially with the ministries of the petroleum &amp; the industry &amp; the mines &amp; the banks</td>
<td>0/49338</td>
</tr>
<tr>
<td>I$_9$: cooperation with scientific certified centers such as the research &amp; the medical centers &amp; the universities to increase the qualitative level of the products &amp; the staffs skills</td>
<td>0/53073</td>
</tr>
</tbody>
</table>

Table 7: ranking the strategies

<table>
<thead>
<tr>
<th>The strategies in 4 perspectives of balanced scorecard</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>C$_5$: The customer focus &amp; teaching it to the staffs especially the sale &amp; the marketing personnel</td>
<td>1</td>
</tr>
<tr>
<td>C$_1$: Converting Sepidan brand to a national brand</td>
<td>2</td>
</tr>
<tr>
<td>C$_3$: Forming the telephone centers to hear the voice of the customer &amp; the continuous study about the customer &amp; his/her subjectivity &amp; attempts for explaining &amp; trust making</td>
<td>3</td>
</tr>
<tr>
<td>I$_2$: Producing new products to attract new customers especially flavored &amp; enriched water</td>
<td>4</td>
</tr>
<tr>
<td>I$_4$: Producing mineral water in with a new package as a book which can be placed (mounted) on the belt &amp; easily portable for the athletes also producing 300cc bottles for the children &amp; using at schools</td>
<td>5</td>
</tr>
<tr>
<td>C$_1$: Increasing the export to the Arabic countries markets</td>
<td>6</td>
</tr>
<tr>
<td>C$_6$: Increasing the amount of the advertisements by focus on informing the quality of the product</td>
<td>7</td>
</tr>
<tr>
<td>I$_5$: Cooperation with the scientific certified centers such as the research &amp; the medical centers &amp; the universities to increase the qualitative level of the products &amp; the staffs skills</td>
<td>8</td>
</tr>
<tr>
<td>I$_3$: Increasing the sale centers (agencies) throughout the country especially south of the country</td>
<td>9</td>
</tr>
<tr>
<td>C$_8$: The culture solutions to increase the per capita mineral water consumption in the country</td>
<td>10</td>
</tr>
<tr>
<td>I$_8$: Attempts for establishing the powerful environmental interactions especially with the ministries of</td>
<td>11</td>
</tr>
</tbody>
</table>
Discussion & conclusion:

One of the necessities of an organization is formulating & choosing the strategies which have the most benefits for it. So most of the organizations with the researchers & university investigators have been thought about planning & providing a model & a comprehensive framework to do it. Determination of the systems, the methods and different technique usage in the body of the organizations, their relations with each other, determination of their strengths & weaknesses. Finally improving the organizations functions is an issue to which the managers of the most companies & organizations are paid attention. In this research a comprehensive method is provided to formulate the strategies by using the different methods & techniques & understanding their relationships with each other & determining the capability of these methods & techniques. In fact combining these techniques & tools, is helped to remove their weaknesses in this research and is led to create a method which has the least weaknesses. Applying this framework was led to formulate & rank the qualification & the improved strategies & connects these 2 areas: the strategic management & the quality management. The strategic management is caused the long term improvement of the organization function & the quality management is caused the short term improvement of it. So applying this framework is caused the long term & the short term improvement of the function but it is necessary to mention that performing these strategies is essential. The organization is used the balanced scorecard to operate these strategies effectively & according to their priorities. These strategies are performed by applying the causal relationship & by considering their priorities. So it is suggested that the balanced scorecard use to operate these strategies after applying the proposed framework for formulating & ranking the strategies in this research.

References


