

## Codifying the Strategic program for Valiasr Hospital in Arak using TOPSIS method

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### Abstract

Attention to strengths, opportunities and efforts to improve them and assess weaknesses and threats to address them is the point of strategic planning and health policy. The present research has tried to apply strategic thinking and method towards the development of a program and a performance enhancement approach in Valiasr Hospital in Arak. In fact, Arak city as one of the industrial poles of the country and Valiasr Hospital of this city as one of the most important hospitals in Arak city and central province need to use strategic planning and methodology. In this regard, the present research has tried to first recognize the different dimensions of performance and factors affecting this performance. Then, by using the obtained knowledge, by combining SWAT and Tapsis methods to analyze these factors, then they are going to extrapolate different strategies of Valiasr Hospital. Finally, a strategic proposition is presented to improve performance and eliminate deficiencies and threats.

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### Introduction

The first time, Greeks used the strategic as means of generating war plans by generals, correcting the right time and time, and achieving the desired results. Strategies are, in fact, a plan for moving toward achieving the goal. In fact, where are we going to go, there's no other way to decide what to do (Ulrich et al, 2001).

From a scientific point of view, the strategy is a comprehensive program for action that directs the organization's major orientations and provides resources for allocating resources in pursuit of long-term goals (Rezaeen 2005). Strategy is a model of decision making that takes place in our organization, and acts and conclusions are rational. Good strategies are considered to be instrumental tools and inappropriate strategies are the main weaknesses of the organization (Naō den, D., Sæteren, B., 2006).

Strategies make it possible for organizations to gradually phase out their current state of affairs and arrive at the base (in the future). Usually, organizations tend to turn their core assets into key competencies and compete for asset formation in order to achieve such a situation. (Stoner et al 2005).

Strategic management is a process by which the internal and external environment organization retrieves and obtains information and, with the help of it, develops, implements decisions for a better future. Strategic management is strategic. A way in which the person in the organization responds to opportunities and situations through it. And an organizational response (Woodside et al., 2013).

The basic issue facing each organization is the recognition of the factors influencing the organization's situation, which are either effective factors, internal factors or external factors. Knowing these factors and achieving the importance of each of these factors is the way to better and more logical planning to achieve the goals of the organization. In this regard, government hospitals, which play an important role in educating medical staff and providing health services to the inhabitants of the central province, also require such an approach. Using the optimal method and identifying effective factors using the optimal method, you can help in improving the condition of the hospital and manually will no goals.

### Research Method

The statistical community refers to the set of individuals, objects, or in general phenomena that the researcher can generalize to the outcome of their study. The statistical population of the research is identified by one or more common attributes (Hafez-e Nia, 2004).

The statistical population of this study was all experts and managers of Valiasr Hospital in Arak.

### Sampling methods and sample size

In most cases, due to the large size of the population, it is not possible to refer to all of the community and study them individually. In this case, the researcher will have to study a part of the statistical society and generalize the survey result to the entire statistical community. Referring to a section of the statistical community to identify all of them is called sampling method (Hafez-Nia, 2004).

The sample size of this study was composed of five experts from Valiasr Hospital in Arak, Delphi method (average expert's opinion). The characteristics of the experts are as follows:

- Mr. Mehrdad Nahvi, Supervisor, Laboratory, Laboratory.
- Mr. Behrouz Shakour, financial advisor to the hospital and accounting expert.
- Mr. Morteza Roghani responsible for procurement and purchasing - accounting expert.
- Mr. Esfandiar Tahavori Metron Hospital - Nursing.
- Mr. Ibrahim Mahdavi is a computer engineer and responsible for the server room.

### **Methods and tools for data collection**

The compilation of the required research information is one of its essential steps. Each researcher uses specific methods according to the subject, the goals and the place studied. In order to collect information and data needed in this research, the following methods have been used:

### **Library and Documentation Studies**

In the library and document studies section, scientific resources and documents are used, including books, internal and external articles, internet sites and master's theses and doctoral degree related to the research.

### **Field studies**

Field studies are of great importance in location-based research. Therefore, in this study, by referring to the area of Valiasr Hospital in Arak, the required data were collected in different ways, interview, and most importantly the completed questionnaire.

### **Validity and reliability of the research**

Testing the fitting of data and determining the level of trust or reliability, validity or validity in social research is very important. Because the desirable measurement is that the results are first accurate and correct, that is, it represents the true differences in the reality or phenomenon being measured, and the second is the same attribute or attributes that the researcher intended. In reliability, it is tried to determine if the results of measurement are reliable by a certain tool. Measurement tool (questionnaire), with which accuracy or accuracy, can be measured by the subject matter, and if the corresponding measurement is repeated under the same conditions, are the same results obtained (Kalantari, 1382). For the researcher's reliability, a series of methods or tools are used, the most important of which are: 1. Reaction method 2. Parallel or peer-to-peer test. 2. Method of half-rendering. 4. Richardson's method. -Cronbach's Alpha Method (Kalantari, 2003). ) Many of these methods can be calculated using SPSS software, but because of the more general use of the Cronbach Alpha coefficient, we use this method.

### **The validity of research**

In order to be valid, the questionnaire should be used by experts and experts in order to use international standard questionnaires. It is sufficient to note in the thesis that the supervisor and reviewer confirmed the validity of the questionnaire.

Health Questionnaire: The research questionnaire should be designed according to the objectives of the research, hypotheses and research questions. For this purpose, the first step is to study similar research and look at their research questionnaires. After formulating a first questionnaire which is done with the knowledge and experience of the implementer or the executives of the research and the study of the sources and records of the research, this questionnaire, which is a crude questionnaire, is placed on the test plant. One of the steps to test it is to provide a questionnaire to a number of expert, knowledgeable and expert people. While describing the goals and assumptions of the research and explaining the purpose of the elaboration of any question or set of questions in order to reach it, the experts are asked to comment on the questionnaire and its correction (a method commonly used to examine the validity of the questionnaires Is used). In the next stage, a number of questionnaires (which will be a proportion of our entire community and can range from 5 questionnaires to more than 30 questionnaires) will be completed by sample people of the community. This stage is usually called pretest. Often, by completing a number of questionnaires, the researcher can figure out whether the people of the community surveyed have an understanding and understanding of the questions? Questions are correctly arranged in terms of formatting, ordering, etc.?

### **Research Reliability**

The purpose of the validity or reliability of the questionnaire is that if the attributes measured with the same instrument and under the same conditions and at different times are re-measured, the results are almost identical. The Cronbach's alpha test, or reliability or reliability of a questionnaire, is a statistical test that results in a coefficient called Cronbach's alpha, to test the reliability or reliability of a Likert scale, and its multiplicity of responses are used.

Cronbach's alpha coefficient is used to measure the level of one-dimensional attitudes, judgments, and other categories that are not easy to measure. In fact, we want to see how well the respondents have taken the same questions

$$\alpha = \frac{K}{K - 1} \left( 1 - \frac{\sum_{i=1}^K \sigma_{Y_i}^2}{\sigma_X^2} \right)$$

As much as a positive affinity between questions, the Cronbach alpha will increase and vice versa. Obviously, as much as the Cronbach Alpha index is closer to 1, the internal correlation between the more inquiries and the resulting questions will be homogeneous.

Usually, because of the complexity of calculating this coefficient, the researchers use the spss SPSS software to calculate it. Note that the Cronbach's alpha coefficient should be more than 0.7, so that the questionnaire is reliable.

| Cronbach's alpha | Questions number | Variable                     |
|------------------|------------------|------------------------------|
| 0.836            | 21               | Strong sub-indexes           |
| 0.767            | 14               | Sub-indicators of weakness   |
| 0.826            | 16               | Under Opportunity Indicators |
| 0.803            | 15               | Sub-Indices of Threat        |
| 0.822            | 4                | Indicators                   |

Totally, the calculated reliability for the 70 research measures is higher than the average, and it can be claimed that the validity of the results of the questionnaire is appropriate.

### TOPSIS Method

This model was proposed by Air Nguyen in 1981. In this method, the selected M is evaluated by the index N (Momeni et al., 138: 1390).

The principle logic of this model defines the ideal solution and the ideal solution. In this model, the optimal options that have the most similarity with the ideal, will get higher rank. The target space between two criteria as an example is shown in Figure 4-4 of the following page. A and -A, respectively, are the ideal solution and the ideal solution. Option A1 with less than A2 ratio has less distance to the ideal solution and negative solution (Chang, 2003, 107-115).

In this method, in addition to considering the distance of an Ai option from the ideal point, its distance from the ideal point is also considered. It is assumed that the utility of each indicator is uniformly incremental or decreasing.

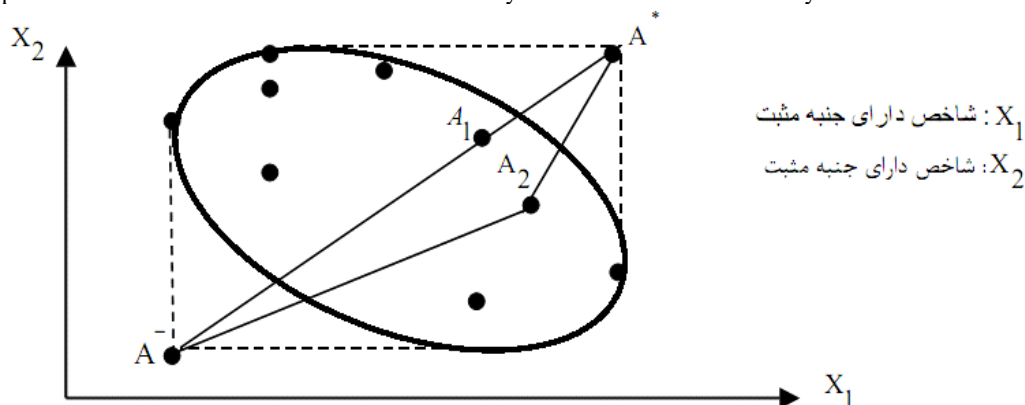


Figure 2.3 Target space two criteria in the TOPSIS pattern

Source: (Momeni et al., 133: 1389)

### Advantages of the TOPSIS approach

In this research, TOPSIS has been used to determine the difference in the importance of inter-components and references in the design of a strategic hospital plan. The main advantages of this method are summarized in terms of the terms:

- Quantitative and qualitative criteria are involved in the evaluation as a matter of course.
- Considerable number of criteria is considered.
- This method applies to clear results with the appropriate action speed.
- System performance is desirable and acceptable.
- The desirability of the components and references in problem solving is uniquely incremental or decreasing (ie, the amount of camel index, more utility and vice versa).
- The relationships used to normalize the information, calculate distances, and the method of determining the weights of the index is optional and can be adapted to the type of information contained in the problem.
- The input information can be changed and checked for how the system responds based on these changes.
- Prioritization in this method is accomplished with the logic of similarity to the ideal answer. Based on the fact that the selection option has the shortest distance from the ideal solution and the furthest distance from the worst solution.
- If some of the components and the purpose of the evaluation of their reduction and others are aimed at assessing their increase, the TOPSIS approach easily achieves the ideal solution, which is the combination of the best achievable values of the criteria.
- The TOPSIS approach takes into account the distance from the best answer and the worst solution, taking into account the proximity of the optimal answer simultaneously.
- Exit the transmissions in a quantitative manner, which in fact is the quantity, the final weight of the price, of the components and the statement. These weights can be used in solving linear or integer programming problems as target function coefficients, while component points and references in other data may be affected. (Malekzadeh, 139: 2008; Pakdin Amiri et al., 67: 2008) (Srdjevice, B Et al. 2004, 34, 35).

### Problem solving using TOPSIS pattern

In this way, the option M is evaluated by the index N. In general, this technique is based on the notion that the choice should have the least distance with the ideal (+A) and the ideal distance (-A). Solving the problem with this method requires the following steps:

$$r_{ij} = \frac{r_{ij}}{\left( \sum_{i=1}^m r_{ij}^2 \right)^{\frac{1}{2}}}, \quad (j = 1, \dots, n)$$

- Quantize and scale the matrix with the help of Euclidean soft. The derived matrix is called the matrix N.
- Obtain a non-scale matrix. Scalar unmatched matrix of the product of the product, the non-scalable matrix (N) in the matrix matrices (W).

$$V = N \times W_{n \times n}$$

$$V_j^+ = V$$

$$V_j^- = V$$

- Determine the ideal solution and the negative ideal solution. Vector of the best values of each index. Matrix vector of the worst indexes of each matrix.
- Obtain the opacity of each option up to the ideal of positive and negative  
 Euclidean distance of each option to positive ideal  
 Euclidean distance of each option to negative ideal

$$d_i^+ = \sqrt{\sum_{j=1}^n (V_{ij} - V_j^+)^2}, i = 1, 2, \dots, m$$

$$d_i^- = \sqrt{\sum_{j=1}^n (V_{ij} - V_j^-)^2}, i = 1, 2, \dots, m$$

- Determination of relative closeness (CL \*) is an ideal solution (Modell, 2000).

$$CL_i^* = \frac{d_i^-}{d_i^- + d_i^+}$$

Options Rating: Each option with a CLI \* is bigger and better than the other ones.

In general, the described cases can be presented in the following eight steps:

1. Formation of data matrix based on m option and n index:

$$A_{ij} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix}$$

2. Standardization of data and the formation of standard matrices through the following relationship:

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{k=1}^m a_{kj}^2}}$$

3. Determine the weight of each index ( $W_i$ ) based on  $\sum_{i=1}^n \beta_i = 1$ . In this regard, the indicators are more important than the higher weight. In fact, the matrix ( $v$ ) is the product of the standard values of each index in its own weights.

$$V_{ij} = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \dots & w_n r_{1n} \\ w_1 r_{21} & w_2 r_{22} & \dots & w_n r_{2n} \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ \cdot & & & \cdot \\ w_1 r_{m1} & w_2 r_{m2} & \dots & w_n r_{mn} \end{bmatrix}$$

4. Determine the distance between the i-th alternative from the ideal alternative (the highest performance of each indicator), which is represented by  $(A_i^+)$ .

$$A_i^+ = \left\{ \left( \max_j v_{ij} \mid j \in J \right), \left( \min_j v_{ij} \mid j \in J' \right) \right\}$$

$$A_i^+ = \{v_1^*, v_2^*, \dots, v_n^*\}$$

5. Determine the distance i is the minimum alternative (the lowest performance of each index), which is represented by  $(A_i^-)$ .

$$A^- = \left\{ \left( \min_i v_{ij} \mid j \in J \right), \left( \max_i v_{ij} \mid j \in J' \right) \right\}$$

$$A^- = \{v_1^-, v_2^-, \dots, v_n^-\}$$

6. Determining the ideal distance criterion for an alternative ( $d_i^*$ ) is ideal and the alternative is at least equal to ( $d_i^-$ ):

$$d_j^+ = \sqrt{\left(\sum_{j=1}^m v_{ij} - v_j^+\right)^2}$$

$$d_j^- = \sqrt{\left(\sum_{j=1}^m v_{ij} - v_j^-\right)^2}$$

7. Determine a coefficient that is equal to the minimum alternative spacing divided by the sum of the minimum alternative distance ( $d_i^-$ ) and the ideal alternative distance ( $d_i^*$ ), which is represented by ( $C_i^*$ ) and calculated from the following equation.

$$CL_1 = \frac{d_j^-}{d_j^- + d_j^+}$$

8. The ranking of alternatives is based on the amount ( $C_i^*$ ).

The above rate fluctuates between  $0 \leq C_i^* \leq 1$ . In this regard,  $C_i^* = 1$  represents the highest rank and  $C_i^* = 0$  also represents the lowest rank (Kahraman, 2007).

### Conclusion and discussion

The four indicators assessed in this study were: strengths, weaknesses (internal factors) and opportunities and threats (as external factors). The result obtained according to the presented table is the following (it is worth noting that the research indicators are based on sub-indexes defined).

**Table 5-1 Final weight of research indicators**

| Steps |         |           |           |           |           |           |           |           | Final weight |
|-------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--------------|
| S     | $d_j^+$ | 0.0000    | 0.0004720 | 0.0000    | 0.0000    | 0.0000    | 0.0004720 | 0.0217253 | 0.9202879    |
|       | $d_j^-$ | 0.0073470 | 0.0000982 | 0.0021275 | 0.0453944 | 0.0079442 | 0.0629112 | 0.2508211 |              |
| W     | $d_j^+$ | 0.0029313 | 0.0003141 | 0.0016785 | 0.0453944 | 0.0079442 | 0.0582625 | 0.241376  | 0.1262744    |
|       | $d_j^-$ | 0.0009968 | 0.0001935 | 0.0000266 | 0.0000    | 0.0000    | 0.0012169 | 0.0348847 |              |
| O     | $d_j^+$ | 0.0005094 | 0.0003141 | 0.0001072 | 0.0000    | 0.0004587 | 0.0013884 | 0.0372609 | 0.7290178    |
|       | $d_j^-$ | 0.0039873 | 0.0001935 | 0.0012797 | 0.000000  | 0.0004587 | 0.0100485 | 0.1002422 |              |
| T     | $d_j^+$ | 0.0073470 | 0.0000    | 0.0016785 | 0.0000    | 0.0052123 | 0.0142378 | 0.1193222 | 0.6556888    |
|       | $d_j^-$ | 0.0000    | 0.0010007 | 0.0000266 | 0.0453944 | 0.0052123 | 0.0516340 | 0.227231  |              |

The final ranking of research indicators is as follows:

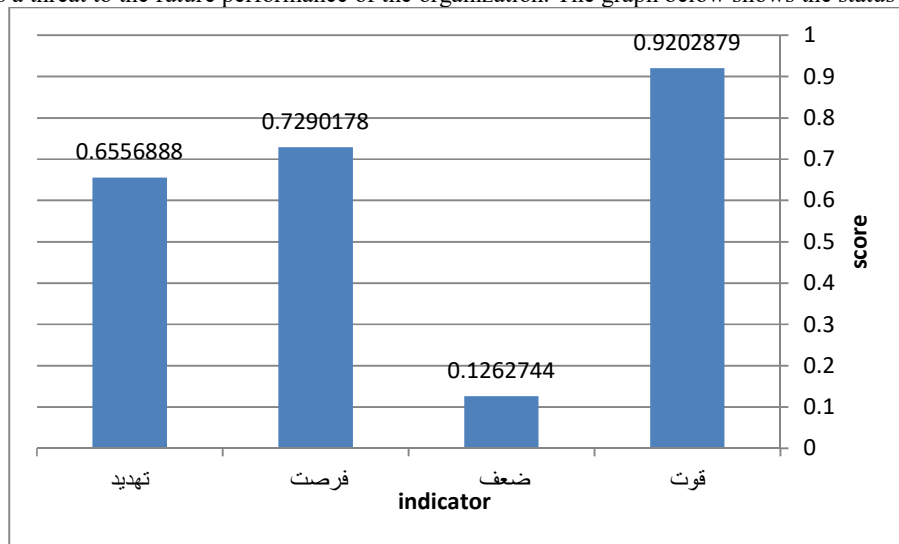
$$S > O > T > W$$

The strength indicator has earned the highest score among the four indexes. The score for this indicator was 0.92. As far as the definition given in Chapter 3 is concerned, the fact that this value is close to one is more important. Therefore, it can be claimed that Arak Valiasr Hospital is in a good position, as the most influential and most important indicator of the hospital's status is a strong indicator with a score close to one.

After this opportunity indicator, which is a part of the external factors, has earned the highest score. The score is 0.73, which is still a high score. And highlighting the high opportunities ahead of the organization  
 After these two indicators, the threat index is rated 0.66 and is considered a hazard for the organization, although in the current situation, the score of this indicator is lower than the two strengths and opportunities, but the relatively high number has been allocated.

Finally, the weakness indicator gained the lowest score (0.13). Which indicates that there is no serious weakness in the organization.

Finally, the study of research indicators shows that despite the high score of strengths and opportunities, the threat indicator is a threat to the future performance of the organization. The graph below shows the status quoted.



**Graph 0-1 Score of research indicators**

The highest score for the strength indicator is between the four highest score points.

### **Conclusion related to sub-indexes of research**

In this section, the results of the study are presented in four groups of research subcategories.

#### **Review of the sub-indicators of strength**

The number of research subtasks in the strength section was 21, which, based on the steps taken in the previous chapter, obtained the points as described in the table below. The highest and most important acquiring score is the subcategory of medical records. In fact, this subset, along with a subset of the subsets, is part of the hospital management system management system, which earns the most points indicating the importance of the system in hospital management. The second sub-index that earned the highest score. It is related to the crisis management department (the existence of multiple evacuation systems for patients and staff), the importance of this sub-index should also be considered in the incidence and frequency of natural disasters in the country. The third most important subcategory based on the acquiring privileges is the commitment to work and the beliefs of personnel in the service of the people. The most important capital of any organization is the specialist force of that organization. The commitment and belief of this force to perform the duty and serve the people is a very valuable asset and should pay attention to it. The fourth subcategory of commitment to work and the beliefs of personnel for the service of the people, which indicates the attention of the hospital management to the teaching staff. The fifth sub-indicator in the strength of the availability of specialized equipment and the appropriate equipment available to the general public. Other details are also given in the table below.

**Table 5-2. Weight and final rating below strength indicators**

| Rank | final score of each option | Code | Underline  |
|------|----------------------------|------|--|
| 1    | 0.799678                   | s15  | Electronic medical records system  |
| 2    | 0.646111                   | s13  | Multiple drainage systems suitable for patients and staff (elevators, ramps and emergency stalls)  |
| 3    | 0.634358                   | s5   | Commitment and belief of personnel to the service of the people  |
| 4    | 0.598787                   | s6   | Training courses for employees   |
| 5    | 0.595435                   | s14  | Existence of specialized equipment and equipment suitable for the public   |
| 6    | 0.572913                   | s20  | Availability of information system   |
| 7    | 0.55421                    | s10  | The existence of a hospital management and accident management system  |
| 8    | 0.532883                   | s1   | General and special cleanliness in the hospital  |
| 9    | 0.524808                   | s12  | Carrying out hospital accident maneuvers   |
| 10   | 0.515886                   | s3   | Average age (young) of hospital staff  |
| 11   | 0.502026                   | s21  | Existence of Outpatient Patient Information System   |
| 12   | 0.492031                   | s18  | The existence of electronic communication service (intra-hospital communication)   |
| 13   | 0.470465                   | s11  | Organizational Management of Accidents (including: 1- Command 2- Operations Section 3-Planning Section 4- Logistics and Support Division5- Department of Administrative and Financial Affairs, Hospital) |
| 14   | 0.469909                   | s7   | Existence of employee performance evaluation system  |
| 15   | 0.464264                   | s2   | Implementation of Hospital Renovation Plan   |
| 16   | 0.370061                   | s8   | Use of hospital staff comments (by management) in hospital administration  |
| 17   | 0.36825                    | s9   | Hospital management attention to staff problems  |
| 18   | 0.345411                   | s19  | The presence of a dysfunctional service (using a defined hospital system)  |
| 19   | 0.315436                   | s17  | The existence of a terminology service (such as coding diagnosis based on international codes)   |
| 20   | 0.280007                   | s4   | More Hospital Occupation (Single Occupation)   |
| 21   | 0.000763                   | s16  | The existence of a flat management information system  |

**Review the underlying indicators of weakness**

In this section, there are 14 sub-categories of weightlifter placed in the previous chapter. The highest score is the huge difference in pay between doctors and staff. This subcategory, along with the sub-point of the third point (employees' dissatisfaction with the status of salaries), emphasize the category of justice and economic justice. In fact, the organization has not been able to provide this category, and the most important weakness of the hospital (and, in general, the treatment system) in this regard. The second point is the underestimation of the burnout and the hospital's age, which is resolved by the implementation of the renovation plan. The weakness of communication with research centers and the university and the international community is also a fourth weakness that should be given special attention. The fifth sub-indicator in this section is the low speed of the Internet. Due to the role and infrastructure of the Internet, special attention should be paid. Other sub-indexes have also earned points in the table below.



**Table 5-3 Final weight and rank below the weaknesses**

| Rank | Final weight | Code | Underline   |
|------|--------------|------|---|
| 1    | 0.853359     | W8   | The dramatic difference in pay between doctors and staff  |
| 2    | 0.841693     | W4   | Burnout and hospital age  |
| 3    | 0.599228     | W9   | Employee dissatisfaction with earnings status   |
| 4    | 0.59238      | W13  | The weakness of the relationship between the research centers and the university, both internally and internally  |
| 5    | 0.587751     | W14  | Low speed Internet  |
| 6    | 0.568841     | W10  | The lack of an electronic nursing record  |
| 7    | 0.392959     | W7   | Deciding, planning and implementing without interfering with the actual beneficiaries without informing them  |
| 8    | 0.387987     | W6   | Lack of fairness in payments (participation rights, etc.)   |
| 9    | 0.217301     | W3   | Lack of adequate green space in the hospital  |
| 10   | 0.217733     | W12  | Lack of patient recovery information system (after discharge)   |
| 11   | 0.198555     | W5   | The lack of an electronic consultation system for the diagnosis and prescription of doctors   |
| 12   | 0.071052     | W2   | The lack of hospital treatment (hospital wastewater treatment)  |
| 13   | 0.063689     | W11  | Absence of decision support systems (using a computer to assist in decision making as an adjunct to a hospital information system, a diagnostic decision-making system, a treatment decision-making system) |
| 14   | 0.046446     | W1   | The lack of design of the exterior and interior of the hospital   |

#### **Examining Opportunity Sub-Indicators**

Organizational progress is one of the most important factors in the progression of the hospital. The sub-indexes under review are 16 items that have earned the following points in the table below. The first sub-indicator: Covering the majority of patients in the hospital (due to the number and variety of hospitals), this indicator emphasizes the variety available to serve the people and the field of education for the various specialties. The second most important subcategory: proper access to the hospital from other parts of the central province to the city of Arak, emphasis on the geographical location of Arak and the appropriate access to this hospital from different parts of Arak emphasizes the opportunity to provide services to different locations. The third opportunity: the existence and implementation of a renovation plan and provision of services Hospital need (Hospital renovation project) Physical and service problems are the status quo. This project provides the ground for eliminating existing deficiencies and improving the quality of the current services. The fourth opportunity is: Continuing education courses by the University of Medical Sciences, a factor in promoting the level of science employees have a key role to play in improving the quality of services provided. The fifth opportunity collaborate with other agencies to provide cross-service services, which can compensate for some of the shortcomings of the organization. Other opportunities are described in the table below.

**Table 5-4. Final weight and ranking below Opportunity Indicators**

| Rank | Final weight | Code | Underline   |
|------|--------------|------|---|
| 1    | 0.92085      | O5   | Covering the majority of patients referring to the hospital (due to the number and diversity of the hospital)   |
| 2    | 0.777315     | O7   | Appropriate access to the hospital from other parts of the central province to Arak   |
| 3    | 0.764104     | O3   | Existence and implementation of the renovation plan and the provision of hospital services (Hospital renovation project), which addresses existing physical and service problems. |
| 4    | 0.75034      | O6   | Continuing education courses by the University of Medical Sciences  |
| 5    | 0.725459     | O8   | Collaboration with other organs to provide mutual services  |
| 6    | 0.725893     | O13  | Research on environmental pollution, elderly medicine and emergency medicine and trauma   |
| 7    | 0.71829      | O1   | The wide range of referral patients to the hospital (provinces and provinces adjacent   |
| 8    | 0.71371      | O2   | Appropriate access to the hospital  |
| 9    | 0.70967      | O4   | Satisfaction of clients and patients with services provided in the hospital   |
| 10   | 0.693718     | O16  | Existing research on environmental pollution, elderly medicine and emergency medicine and trauma  |
| 11   | 0.640153     | O9   | Use of charitable donations and organizations and institutions to improve the facilities and services provided in the hospital  |
| 12   | 0.599047     | O11  | Collaboration with other organs to provide mutual services  |
| 13   | 0.530287     | O15  | The existence of health, industry, and charity organizations interested in participating in the implementation and use of research results  |
| 14   | 0.510282     | O10  | Possibility to carry out extensive research in the field of various diseases considering the presence of different sections and clients with various problems                     |
| 15   | 0.422705     | O14  | Existence of endowment culture in Arak city   |
| 16   | 0.283725     | O12  | Touristic tourism for neighboring countries   |

**Check the sub-indicators of the threat**

The factors identified as threats include 14 cases. The most important threat to the organization's progress is the increase in the number of clients to the hospital as a result of the implementation of the health insurance plan. Which must be addressed by providing appropriate solutions. Otherwise it threatens the quality of hospital services. The second is the threat: the delay in paying hospital fees. This affects the provision of materials and services in the hospital. The third point: The existence of many government and mandatory directives, and abusive rules, refers to the process of adopting circulars. The third point: the inappropriateness of the increase of tariffs with the steep increase in prices and the removal of subsidies for energy, still refers to the economic category, which must be addressed by appropriate measures. Fifth: The level of high expectations of the authorities from the hospital is due to the volume of the visitors. This is a threat to the service provided. Because at all times, expectations and expectations are expected in a rational and accountable organization. Other items are described in the table below.

**Table 5-5 Final weight and ranking below the threat indicators**

| Rank | Final weight | Code | Weight and final rating below the threat indicators  |
|------|--------------|------|--|
| 1    | 0.903618     | T10  | The increase in the number of clients to the hospital as a result of the implementation of the health insurance plan and lack of facilities to service them. |
| 2    | 0.89571      | T9   | Late payment of hospital claims  |
| 3    | 0.85236      | T5   | There are many government and mandatory government directives  |
| 4    | 0.827096     | T8   | The disproportionate increase in tariffs with a steep rise in prices and the elimination of subsidies for energy carriers                                    |
| 5    | 0.793964     | T2   | The high expectations of the authorities from the hospital due to the high volume of attendees   |
| 6    | 0.752004     | T6   | Low health tariffs in the public sector  |
| 7    | 0.683486     | T7   | Current government deficit. Inadequate per capita health   |
| 8    | 0.609856     | T1   | Unwillingness of doctors to work in the public sector  |
| 9    | 0.588243     | T15  | The lack of attention of provincial authorities to the results of research in policy and decision making   |
| 10   | 0.568051     | T4   | Failure to comply with approved laws   |
| 11   | 0.198288     | T11  | Air Pollution Caused by Industrial Activities in the Region  |
| 12   | 0.179389     | T14  | Spread the types of cancer   |
| 13   | 0.148852     | T12  | The spread of diseases caused by industrial activities (pollution of water, soil, etc.)  |
| 14   | 0.082305     | T13  | Water crisis, reduction of underground water volume and pollution of water resources   |
| 15   | 0.041549     | T3   | Lack of proper infrastructure for health tourism   |

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