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MEASURING THE RELATIVE EFFICIENCY OF THE HEALTH SERVICE FOR DENTAL CLINICS USING DATA ENVELOPMENT ANALYSIS (DEA) (CASE STUDY: RASHT CITY DENTAL CLINICS)

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ABSTRACT
Performance evaluation system for organizational units is one of the main elements of the planning process in order to improve the activities. Design and management of the assessment system and evaluation is also one of the main concerns for the company's strategic planning. Hence, in this study to evaluate the performance the DEA method as a tool in evaluating the performance of decision-making units was applied where the inputs (Advertising costs, the restoration tariff, number of dentists) and outputs (number of patient admissions, patient satisfaction, number of referrals for restoration) of the organization used to evaluate the performance of organization. For this purpose, 24 dental clinics in the city of Rasht have been analyzed. Technical efficiency of selected clinic in Rasht was estimated and then based on the results the clinics were ranked. The period of analysis includes 2013. The results showed that the Clinics (Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Pastor and Dana Ali, Aryan, Danesh, Iranians, Imam Ali and Pasargad) have Performance equal to 1. Then for inefficient clinics, Clinics were considered as reference. The average of technical efficiency for dental clinics in Rasht, the Average performance management and the Average efficiencies resulted in scale was estimated to be 0.94, 0.96 and 0.97, respectively.

Keywords: Performance Evaluation, Efficiency, Data Envelopment Analysis, Inputs, Outputs

INTRODUCTION
Nowadays, the assessment of the performance of various sectors of the economy is important issue which has attracted the attention of many researchers and especially with the introduction of issues such as decentralization and increasing of accountability for executives in various sectors and also discussion about the optimization of existing resources, have prompted the different organizations to evaluate the performance of the units under their supervision (Movahedi *et al.,* 2010). On the other, the limitation of resources and facilities since the last to the current era that is the information age, postmodern and significant development of science and technology; always has been known and in the future it will be impose on the socio-economic conditions with additional intensity. Thus, the optimal use of available resources and improvement of efficiency to achieve to welfare and meet the growing needs it has become to significant problem. This issue is very important in the field of health because the health is axis of the sustainable development of social, economic, political and cultural development of human society and has special importance in the substructions of different segments of the society. Therefore, health promotion regardless of a moral duty is a socio-economic category and any health care plan must be part of a comprehensive approach to health policy and eventually form part of an integrated sustainable development (Marandi, 1998). Because paying of attention to the health and investment in this context will be increasing labor productivity and increase the production, the allocation of sufficient resources and using appropriate resources in this section has a great importance. Today, international organizations that activate in health promotion for all countries (such as the World Health Organization and the World Bank) are believe that what most threatens health in developing countries are problems in resource management than the lack of funding for healthcare (Ghaem and Aladdin, 2002). Using scientific tools can present useful information for decision-making about improving of methods for operations and appropriate allocation of resources to administrators. Hospital as an economic unit, for optimal use of existing resources is forced to employ the performance analysis. Having a high level of efficiency with

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improvement of operations and efficient use of resources will make ensure the success of hospitals in achieving goals (Alam, 2010). As regards to quality and type of services in dental clinics are similar to hospitals and medical centers; therefore, this study investigates the efficiency in dental clinics.

LITERATURE: Alam *et al.,* (2010), perform a research to measure the effectiveness of health services in the hospital covered University Of Medical Sciences Of Shahid-Beheshti using Data Envelopment Analysis (DEA). The findings show, in 2005, 43.75 percent, in 2006, 31.25 percent and in 2007, 37.5 percent of hospitals were efficient.

The results reached to the suggestions to improve the efficiency of inefficient hospitals through the potential savings in resources at the rate of 62.44% on infrastructure and 43.88% on the active beds; and 37.15% in number of physicians and 38.58% in the number of paramedic.

Nassiri *et al.,* (2009) in a study conducted in 1388 investigate the assessment of efficiency of headquarters of health care assurance organizations using complete ranking DEA.

The headquarters of health care assurance of provinces that have efficiency less than 1 are different in viewpoint the initial values and optimization of input of Area of physical space, staffing and overhead costs vary and have a surplus of manpower, physical space and overhead costs. Therefore, to achieve maximum efficiency of the organization one should be reduced the amount of the surplus of mentioned inputs within a framework of a comprehensive program to achieve a desirable level of efficiency.

Mahmoudi Khoshroo et al in a study conducted in 2010 proceed to evaluate the efficiency of municipalities in the province of Kurdistan using DEA. The results indicate that in 2005, 47.87 percent, In 2006, 27.27 percent; In 2007, 31.82% and in 2008, 45 Percent of municipalities in the province were particularly effective. The highest average of efficiency during the period which the units that had complete data were Saghez municipality and the lowest performance of the municipality during the period was Sarish Abad municipality.

Namdari *et al.,* (2010) conducted a study in 2010 to evaluate the efficiency of state banks using DEA. The results suggest that the state banks are placed in the range of increasing returns to scale.

In other words, the presence of large quantities of units with increasing returns to scale indicates that these units have economic feasibility for expand their activities. Since in this research, the studied banks have increasing returns to scale, this shows the impact of scale and the size of bank on the efficiency of scale.

McMullen and Strong (1998) cited in study to the selection of mutual funds using the DEA that used variables such as expenditure ratio and investment restriction to introduce the mix of the best units and to identify the weak and strong investment as well as the risk and return in the traditional model.

In fact, the data envelopment analysis helps investors to have more accurate choose using several variables in contrast to the two variables specified in the capital market (Strong and McMullen, 1998).

Galagedera and Silvapulle (2002), used data envelopment analysis for measurement of 257 the mutual fund performance appraisal.

Observations showed that the proper selection of input and output can be effective in determining the appropriate performance and the studied size of the unit and the life of unit have not great influence in reviewed efficiency units.

FARRELL-TYPES OF EFFICIENCY: Farrel (1957) proceeds to comprehensive study about types of the efficiency in firm and the measurement of productive efficiency. Basically, three types of efficiency are introduced that will be discussed following:

A. Technical efficiency
B. Allocative efficiency
C. Economic efficiency (general efficiency)

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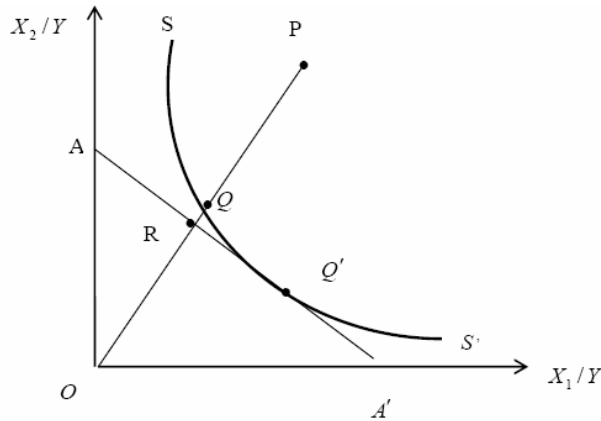
Figure 1: Farrell-type of efficiency

Consider, for the sake of simplicity, the different firms which in equal terms, under fixed return to scale assumption and equal technology product unit output (y) with two factors (x_1, x_2). In Diagram 1-2, the isoquant ss' presented for quietly effectiveness firm. Therefore, the firms which placed on the isoquant ss', have technical efficiency equal to 1, 100 per cent. The equality of efficiency to 1 means that the complete technical efficiency in firm. In this diagram, the firm which presented with P, is technical non-efficiency because it used more production factors to produce a determined value of product (Farrell, 1957).

But the firm which placed in Q point is perfectly efficient since it placed on the boundary efficient curve. The value of the technical non-efficiency for p firm is equal to interval of PQ. The interval of PQ is a value that one can be decrease the input factor without decreasing in the output. Therefore, the $\frac{OQ}{OP}$ is defined as a measurement for technical efficiency for p firm. This ratio will be equal to 1 for a perfectly efficient firm.

At now, one can be calculated the allocative efficiency using inputs price ratio that presented by slope of equal cost AA'. The allocative efficiency for p firm is defined as following:

$$AE = \frac{OR}{OQ}$$

If instead of production in the Q point that has technical efficiency, product in the Q' point that has both technical efficiency and allocative efficiency, the RQ will be showing the diminishing in the cost of production. In the other word, Q is the optimal combination to use of inputs for an efficient firm, but it is allocative non-efficiency, because it can be placed on the lower equal cost slope AA' instead to place on the higher equal cost slope to production a unit. Therefore, Q has lowest cost of production in compare to other points on the ss' curve and the change in the combination of using of production factor from Q to Q' is movement toward diminishing of production cost and increasing of $\frac{OR}{OQ}$ ratio, in spite the fixation of technical efficiency (Amade *et al.,* 2009).

The combination of technical efficiency and allocative efficiency is called *economic efficiency*. The economic efficiency is mean that the efficiency in the method of production and the allocation of factors of production. This kind of efficiency is obtained from multiplication of technical efficiency in allocative efficiency. In fact, the economic efficiency can be understood as ability of firm to get possible maximum gain due to prices and level of inputs. From viewpoint of Farrell, the economic efficiency is integrated of technical efficiency and allocative efficiency and introduces the $\frac{OR}{OP}$ ratio as a criterion for economic efficiency (same ref.).

In this study, the statistical population include all of the dental clinics places in Rasht city (N=30) that have been operated in 2013 and the required information about them is available.

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The results of study will be have required validation when the sum of variables (production factor and product) are smaller than threefold of observation (firms); in the other word, the following relation will be:

DMUs≥ (number of inputs + number of outputs) x 3

(3+3)x3≤24

 That it considered as sample due to above relation and availability of related information for 24 clinics.

 MAIN PURPOSE: The theoretical analysis of measurement of relatively efficiency due to research technics in the DEA

Subsidiary Purposes

- The measurement of successfully of dental clinics in the utilization of available facilities.
- Identification of inefficient dental clinics and recognition of non-efficiency origin.
- Surveying of strong and weak points and their analysis and presentation of proper strategy for improvement of dental clinics condition.

 MAIN QUESTION is How about performance of dental clinics in the Rasht city using DEA

 SUBSIDIARY QUESTION is

1- What the probable causes for non-efficiency of inefficient clinics?

   2- How about ranking of efficiency of dental clinics for Rasht city?

 3- Do any clinics are assigning as efficient unit, due to the inputs which they have and the outputs which get from them?

 4- What the pattern unit(s) for increasing of efficiency of inefficient units?

Data envelopment analysis is a linear programing technique that used to assessment and efficiency of homogeneous units. In the last decade, this method has earned significant benefits as a management tool to measure performance and it is widely used.

In this study, inputs oriented BCC model is used for measurement efficiency of subsidiaries that more details will be defined at continue. Used application was DEAP software that is designed and implemented based on DEA model in order to calculation of efficiency and effectiveness in performance of organization. The score of relatively efficiency for units is calculated using the system and the efficient and inefficient units are determined.

The discussion about DEA began with thesis of Edeard Rohods under the guidance of Cooper, that is examined the academic achievement of students in America's schools in 1978 and the results are published with cooperation of Charenz and Cooper in a paper that called CCR. The CCR with conversion of multiple inputs and output to one input and one output applied the optimization method for mathematical programming to generalize the size of efficiency of one fuzzy input and one fuzzy output to the multiple input and output (Charenz and Cooper, 1978). Then in 1984, the Banker, Charenz and Cooper (1978) published article where a model known as BCC which the word is an acronym of their names was introduced. The discussion about return to scale also added to the CCR model (Banker, 1984).

In this method, discussion making unit (DMU) is applied instead producer in order to recognition it. This method (DEA) which applies the linear programming technique is including of nonparametric methods for estimation of equivalent function of production (Emami, 2000).

Generally, the DEA models are divided to categories: "input-oriented" and "output-oriented". The input-oriented are the models where the inputs are diminished with the fixation of output and in contrast, the output-oriented models are the models where the outputs are increased with fixation of inputs (Mehregan, 2008).

The return to scale indicates that the relationship between changes of inputs and outputs of a productive and service system or firm (Momeni, 2008).

In the initial case, the DEA method pays to present a following model in order to measurement of relative efficiency.

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$$\text{MAX} \quad \frac{\sum_{r=1}^{S} U_{ro} y_{ro}}{\sum_{i=1}^{n} V_{io} X_{io}}$$

$$\text{ST} \quad \frac{\sum_{r=1}^{S} U_{ro} y_{rj}}{\sum_{i=1}^{n} V_{io} X_{ij}} \le 1 \qquad i = 1,2,...,n \qquad r = 1,2,...,s$$

$$U_{ro}, V_{io} \le 0 \qquad\qquad j = 1,2,\ldots,m$$

In the other word, in the DEA method we maximize the harmonic ratio of inputs and outputs provided that the same coefficients in the other firms, does not increasing the efficiency from the unit.

Because the above model is a nonlinear model, in order to facilitate in resolving of above model with assumption of Vio Xio = 1, we convert it to a linear model that finally with application of a series of mathematical operations and due to dual model:

$$\text{Min} \quad \theta$$

$$S.T - \sum_{r=1}^{S} U_r Y_{ro} + \sum_{r=1}^{S} \lambda_j y_{ij} \ge 0 \qquad j = 1,2,...,n$$

$$\theta \sum_{i=1}^{m} V_i X_{io} - \sum_{i=1}^{m} \lambda_j X_{ij} \ge 0$$

$$\lambda > 0$$

Where γ is a vector N x 1 include a constant numbers that shows the set weight for θ. The obtained scalar values will be firm performance that provides the condition 1>θ. The above model is called the CCR model of DEA (Imami, 2000).

RETURNS TO SCALE IN DATA ENVELOPMENT ANALYSIS (DEA): The concept of returns to scale arises when we want to know if the input is changed to a certain proportion, what outputs are changed. This discussion can be included in the DEA model with the assumptions that by them there are two important results: First, the technical performance denotes to the two components of Management efficiency and scale efficiency and the second, large firms are distinct from small firms (Imami, 2000).

INPUTS AND OUTPUTS OF RESEARCH: The selection of the most appropriate set of input and output variables is a critical step in any study of the measurement of efficiency. One of the problems that exist in the set of inputs and outputs is that one can be considered a lot of inputs and outputs for a single decision maker unit (DMU); but in most cases, there is not its related data and it caused to difficult making decision about setting of inputs and outputs (Imami, 2000). Using applied library and internet research and interview with master and experts familiar to dental clinics, the resources allocated to clinics are (1) advertisement cost (2) number of dentists (3) tariff for restoration respectively as inputs in this research are considered.

The outputs are: (1) number of reception of patient (2) number of referring for restoration (3) satisfactory of patient. The qualitative variable of grouping in this research was efficient or inefficient of subsidiaries and all of the inputs and outputs used in DEA are independent variables.

SURVEYING OF RESULTS WITH CCR MODEL: According to obtained results, 13 clinics (Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Pastor and Dana Ali) from 24 studied clinics among the Rasht clinics are efficient (efficiency= 1). Also 11 remained clinics (i.e. 45.14%) are estimated as inefficient. Also according to obtained results, the average of efficiency in this case is 0.94% estimated.

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Table 1: Results with CCR model

Subsidiaries	Level of efficiency	Status of efficiency
Imam Ali	0.86	Inefficient
Jam	0.70	Inefficient
Average of efficiency	0.94	

According to above table, the efficiency for Jam clinics is equal to 0.70 that is lowest that means this clinics can only with 0.70% of self-resources has a same level of current of products; that it is correct about all of the inefficient clinics (for example, the efficiency of Imam Jafar Sadegh clinics is 73%; i.e. the subsidiary can be produce the same level of current products or in the other word, it must be able to diminish its consumption from all of the production factor (without any diminishing of product).

SURVEYING OF RESULTS WITH RETURN TO SCALE MODEL (BCC): The assumption of fixed return to scale only is applicable that the firms are operating in optimal scale.

When we use from CCR model, only the technical efficiency is introduced that included net technical efficiency (efficiency from management) and the efficiency from saving of scale of the firm.

Using of the assumption of return to scale when all of the firms are not operating in the optimal scale will be disturbed the calculated amounts for technical efficiency (with including of scale efficiency). Using of return to scale will be caused to perform most exactly analysis through technical efficiency in term of amounts of efficiency from scale and efficiency from management.

SURVEYING OF SCALE EFFICIENCY: The scale efficiency is a development that an organization can be obtained a return to scale benefit with changing of its size. The assumption of return to scale in the model is meaning that the size of organization is not considered in the determination of relatively efficiency. Frequently, due to increasing of size and scale of economic unit, the cost of productive units will be diminished and in the ideal condition, the large scale of production caused to important saving in the labor, complete using of capacities, facilitate in financial security and etc.

In order to obtain of scale efficiency, the CCR and BCC models are calculated for all of the units. If the calculates efficiency is different for both model, it indicates that the studied units has scale non-efficiency and the amount of this non-efficiency is obtained from deduction of score of calculated efficiency by both model. The size of scale efficiency also is obtained by divide the size of technical efficiency in the CRS state (return of constant to scale) to the size of technical efficiency in the VRS state (return of variable to scale)

Table 2: Technical efficiency= management efficiency x scale efficiency

DMU	Technical efficiency (CRS)	Management efficiency (VRS)	Efficiency from scale (scal)	Status of efficiency	Type of scale
Pasargad	0.80	1	0.80	inefficient	Drs
Average	0.94	0.96	0.97		

As can be seen in the table above, the total mean in the CRS efficiency is equal to 0.938 and total average of efficiency in the VRS efficiency is equal to 0.962 and in the scale efficiency the total average is equal to 0.975%. Since in the case of constant return to scale the clinics, Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Pastor and Dana Ali have been the 1 efficiency and are effective; But when return is variable, In addition to efficient clinics in constant return, the Aryan, Danesh, Iranians, Imam Ali and Pasargadae clinics are also efficient and other clinics in both constant and variable return are inefficient.

The scale efficiency (scal) of Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Pastor and Dana Ali is equal to 1. Among the clinics, Pasargad clinics has lowest scale efficiency and it indicates the non-proportional of size of the clinics, because it has reducer return to scale, therefore it can be operated in optimal scale with increasing its input level.

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REFERENCE SET : In the DEA method there is introduced a combination of two or more firms as a reference or paradigm for each inefficient firm so that the inefficient units for reach to efficiency can be pattern from them. In fact, if an inefficient firm can be review in the utilization of its inputs using arrayed weights it will be place on the boundary of efficiency. Since there are not composed firm in the industry it known as efficient virtual firm. Also, when a firm is efficient, its reference set is own firm. The contribution of each efficient firm in the formation of efficient virtual firm for each inefficient firm is depend on the weight (γ) that is calculated and presented for each efficient firms (Imami, 2005).

In the following table, the reference set of inefficient Clinic in formation of the pattern subsidiary (Reference) is provided for inefficient firms.

Table 3: Reference set

Imam Sadegh	Jafar	Kosar	Aryan	Imam Reza	Danesh
Jihad, Imam Hosein, Dana Ali		Jihad, Imam Hosein, Dana Ali,Children of Gill	Imam sajad, Ansari,Arya, Dana Ali	Imam Hussain, Dana Ali,Arya,	Ansari, Dana Ali, Imam sajad, ,Arya
Imam Reza		Ghaem	Iranian	Jam	Imam Ali
Jihad, Imam Hosein, Imam Sajad	Imam	Ansari, Imam sajad, Arya, Dana Ali	Ansari, Imam sajad, Dana Ali, Arya	Imam Hosein, Dana Ali, Jihad	Nasr, Imam Sajad, Dana Ali

As can be seen, among the clinics studied, the Dana Ali clinic in terms of reference count in the basket of reference is placed in tops (9 time) so it can be considered as most efficient clinic based on counting method. The order of efficiency of clinics based on the counting method is shown below.

Table 4: Ranking of clinics based on counting method

DMU	Times of reference
Dana Ali	9
Imam Sajad	6
Imam hussain-Arya	5
Jihad-Ansari	4
Nasr-Farhangian	1
Saberin- Apadana-Pastor-marlik-children of Gill	0

Due to weight method, the ranking of efficiency of clinics is as follow:

Table 5: Ranking of clinics based on weight method

DMU	Sum of weights
Dana Ali	4.886
Imam Sajad	1.692
Arya	1.654
Imam hussain	0.598
Ansari	0.276
Jihad	0.144
Nasr- marlik- Apadana-Farhangian- Pastor- children of Gill- Saberin	0

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As can be seen, Dana Ali clinic is placed on first order based on both counting methods and based on weighted method. Imam Sajad Clinic also ranks second based on both methods. Arya Clinic is ranked third by both methods, Clinic of Imam Hussein on the third based on counting method, but based on the weight method is the fourth, Jihad Clinic is ranked fourth based on counting method and ranked sixth based on weight method; Ansar clinic is ranked fourth based on weight method but is ranked fifth based on weight method.

But the weight of reference clinics is meaning that the weight related to reference clinics that are higher in term of quantity; it is denote the clinic as inefficient in the first preference for patterning.

Table 6: Input surplus

Subsidiary	Inputs Advertisement cost	Number of dentists	Tariff
Danesh	0	0.017	0.48
Jam	44.29	0	0

According to result, the Jam clinic must be saving in utilizing of production factors to 0.76 (management efficiency) and also due to surplus of production factors can be less utilizing about 44 units than first production factor. Therefore, the aim of Jam clinic must be diminishing each three production factor to 0.76 and also diminishing of Advertisement to 44 units, in addition of it should be 0.76.

In the other word, it must be utilized from first production factor to 44 (44.297) units so that reach to efficiency limit; that these amounts as aim amounts are presented in the following table for all of the studied clinics.

Table 7: Actual amount and Aim amount Input

Subsidiary	Inputs Advertisement cost		Number of dentists		Tariff	
	Actual amount	Aim amount	Actual amount	Aim amount	Actual amount	Aim amount
Imam Reza	100	25	3	2	130	111.800

Due to the model of the research was input-oriented BCC, therefore the amount of outputs are constant and the amount of inputs are calculated. As can be seen, in the efficient units, the proved amounts and aim in the inputs are equal; it means that the efficient units could be reach to an aim that considered in advertisement costs, number of dentists and tariff for dental services. For example, the Imam Reza clinic that is inefficient, its utilization far more than required amount and optimal amount and determined aim. However, to achieve to optimal point and desired efficiency boundary, it should be diminished its advertisement cost from 100 to 25; and the number of dentist diminished from 3 to 2 person also it should be adjusted the tariff so it diminished from 130 units to 111.800 units.

MAIN QUESTION: How about performance of dental clinics in the Rasht city using DEA?

From 24 selected clinics, the Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Marlik, Pastor and Dana Ali (13 clinic) with efficiency score equal to 1 and the percent of efficiency 100% have highest efficiency score.

SUBSIDIARIES QUESTION: 1- What the probable causes for non-efficiency of inefficient clinics?

For finding of non-efficiency origin for each of inefficient clinics, the actual amount and substantiative amount of efficiency of each clinic is calculated and compared with optimal amount. It is observed that the substantiative amount of efficiency in the advertisement cost, tariff of restoration and the number of dentists are higher than its optimal amount; therefore, the origin of non-efficiency of these subsidiaries is the increasing of its input variables means that improper utilization and surplus of resources with can be achieve to this important through diminishing of them.

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Table 8: Resource of non-efficiency

Number of clinic	DMU	Resource of non-efficiency
4	Imam Jafar Sadegh	Advertisement cost
5	kosar	Advertisement cost
8	Aryan	Number of dentists, tariff for restoration
10	Imam Reza	Advertisement cost
13	Danesh	Number of dentists, tariff for restoration
16	Imam Reza-Niroo	Advertisement cost
17	Ghaem	Number of dentists, tariff for restoration
20	Iranian	Number of dentists, tariff for restoration
22	Jam	Advertisement cost
23	Imam Ali	Number of dentists, tariff for restoration

2- How about ranking of efficiency of dental clinics for Rasht city?

According to weight method, the Dana Ali clinic among the clinics studied, the Dana Ali clinic in terms of reference count in the basket of reference is placed in tops (9 times) so it can be considered as most efficient clinic based on counting method. , Dana Ali clinic is placed on first order based on both counting methods and based on weighted method. Imam Sajad Clinic also ranks second based on both methods. Arya Clinic is ranked third by both methods, Clinic of Imam Hussein on the third based on counting method, but based on the weight method is the fourth, Jihad Clinic is ranked fourth based on counting method and ranked sixth based on weight method; Ansar clinic is ranked fourth based on weight method but is ranked fifth based on weight method.

3- Do any clinics are assigning as efficient unit, due to the inputs which they have and the outputs which get from them?

In the DEA method, the firms in compared to other studied firms are introduced as efficient or inefficient; however, it can be possible an efficient firm become inefficient with entering of new firm.

4- What the pattern unit(s) for increasing of efficiency of inefficient units?

The efficient clinics: Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Imam Sajjad, children clinic of Gill, Farhangian, Marlik, Pastor and Dana Ali were pattern clinic or reference that each become reference in 0, 0, 04, 5, 4, 1, 5, 6, 0, 1, 0, 0, 9 times respectively. Therefore, based on counting method there can be introduced efficient clinic through most efficient order as follow: (1) Dana Ali, (2) Imam Sajad, (3) Imam Hossain and Arya, (4) Jihad and Ansari, (5) Saberin, Apadana, Pastor, Marlik and Children of Gill.

But based on weight method, the efficient clinics are: Dana Ali, Imam Sajad, Arya, Imam Hossain, Ansari, Jihad, Nasr, Marlik, Apadana, Farhangian, Pastor, Children of Gill and Saberin as reference clinics that have weight at 4.886, 1.692,1.654, 0.598, 0.276, 0.144, 0, 0, 0, 0, 0 and 0 respectively.

RESULTS AND DISCUSSION

According to obtained results from CCR model, 13 clinics out of 24 studied clinics among the Rasht clinics are efficient (efficiency= 1). Also 11 remained clinics (i.e. 45.14%) are estimated as inefficient. the average of efficiency in this case is 0.94% estimated. But when return is variable, In addition to efficient clinics in constant return, the Aryan, Danesh, Iranians, Imam Ali and Pasargadae clinics are also efficient and other clinics in both constant and variable return are inefficient. In the other word, in 1392, 79% from Rasht city clinics are efficient and 21% are known as inefficient; it means that the inefficient clinic at average can be have the same current level of products with 82% of its resources.

The scale efficiency (scal) of Saberin, Apadana, jihad, Imam Hussain Ansari, Nasr, Arya, Sajjad, children clinic of Gill, Farhangian, Pastor and Dana Ali is equal to 1. Among the clinics, Pasargad clinics has lowest scale efficiency and it indicates the non-proportional of size of the clinics, because it has reducer return to scale, therefore it can be operated in optimal scale with increasing its input level.

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With consider to average amount in the sum of clinics, the highest possibility of saving of resources with average (8.493 units) 3.09% is assigned to advertisement. The results of the research shows that there is not selected a proper combination of inputs for production of minimum cost and the issue become to typical economic-technical efficiency and due to there are not the competing environment for each hospital, it become to a kind of monopoly in the different sections of hospital that it can be the most important causes of non-optimal utilization from inputs combination.

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