Evaluating the Efficiency of Sports Organizations Using the 3-Branch Approach Based on DEA (Case Study: Yazd province)

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Najaf Aghaei[1*]
Habib Ansari Saman
Mohamad Hasan Peymanfar[3]

[1] Associate Professor of Sport Management, Kharazmi University, Tehran, Iran
[2] Associate Professor of Sport Management, Yazd University, Yazd, Iran
[3] Assistant Professor of Sport Management, Kharazmi University, Tehran, Iran

*Correspondence:
Najaf Aghaei, Associate Professor of Sport Management, Kharazmi University, Tehran, Iran
Email: masoud.taghiabadi@gmail.com
ORCID: 0000-0003-1429-4647
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Abstract

Purpose: Today, sport is recognized as an industry and its evaluation can add to its improvement and development. The main purpose of this research is evaluating the efficiency of sports organizations based on the three-branch model including elite sport, human resources and financial-administrative approaches.

Method: The statistical population of the research is all the sports Boards of Yazd province (N=n=45). The data analysis method used in this research is the Data Envelopment Analysis (DEA) method, which is used to calculate efficiency using MATLAB software.

Results: The results of the research show that Squash, Table Tennis, kung fu, Gymnastics and Aquatics are efficient in all approaches. Also, efficient sports Boards in the Elite sport approach are: Squash, Sports associations, The Enabled, Gymnastics, Chess, Automobile and Motorcycle, Cycling, Rowing, Weightlifting and Fencing. In the approach of human resources, Judo, Cycling, Sports associations, Special patients, Rowing, Rural sports, sports for all, Boxing and Squash are efficient. On the other hand, in the administrative-financial approach, Squash, Table Tennis, Sports for all, Kabaddi, kung fu and Aquatics are the most efficient.

Conclusion: Since the present study has evaluated the efficiency with a comprehensive approach, the presented results can be both a basis for the attention of managers in the distribution and allocation of resources and a basis for sports Boards of the province to improve their weaknesses according to the evaluation indicators. In this section, the most important and practical outcome can be stated as the fair distribution of financial resources based on the efficiency of each sports board. Also, the presented model and indicators can be a suitable model for evaluating the efficiency of other sports organizations.

Keywords: Efficiency, Data envelopment analysis (DEA), Sports Boards, Performance.

Introduction

Sport plays an important role in increasing the physical and mental well-being of societies in various dimensions (Xu, Huang, & Shah, 2024). Regular participation in sports activities promotes cardiovascular health, muscle strength and flexibility, addresses a sedentary lifestyle and reduces the risk of chronic diseases (Khan, Dhingra, & Mungreiphy, 2022). Sport also acts as a powerful tool for cultural exchange, breaks down barriers and promotes understanding, and beyond individual benefits, sport strengthens social interaction and community cohesion. This is why sports organizations play a prominent role in the development of societies. However, the success of sports organizations depends on several factors such as optimal management and performance evaluation. Today, performance evaluation plays an important role in achieving managerial success and continuous improvement in organizations and industries. In the meantime, various criteria have been proposed as criteria for evaluating the performance of organizations, and efficiency measurement is one of the most important of them (Esmaeeli, Amiri, & Taghizadeh, 2023). Also, Ren and Liu (2021) stated that the systematic and scientific evaluation of the efficiency of sports services is a prerequisite for optimizing services in this industry. About this, Chadwick (2009) in his research on sports management research in the 21st century states Evaluation in sports organizations has been one of the important categories of attention of many experts and managers of these organizations, because these organizations need to identify their current situation in order to develop improvement programs for reach their desired situation. Therefore, these organizations have chosen new scientific methods to evaluate their efficiency, by using these methods, it is possible to determine the efficient factors and criteria affecting the efficiency by knowing the factors influencing the results obtained. The use of these models in the sports system, like any other decision-making and acting unit, is also increasing dramatically.

One of these models is Data Envelopment Analysis (DEA), which has been widely used in sports. In this regard, Bhat, Sultana, and Dar (2019) show in their study that the use of DEA method in evaluating the efficiency of sports organizations is increasing. In their research, they have examined Baseball, Basketball, Cricket, Cycling, Football, Golf, Handball, and Tennis in the Olympics and identified sources of inefficiency in team and individual games. In another study, Meza, Valério, and Mello (2015) evaluated the efficiency of the Brazilian National Olympic Committee using two different models with the aim of researching the efficiency of financial funds. The input variables of the first model include financial funds and medals provided, and the output variables include the three variables of gold, silver, and bronze medals. In the second model, the only input variable is financial funds, and the output variables are three variables: the ratio of gold to the medals offered, the ratio of silver to the medals offered, and the ratio of bronze to the medals offered. The results showed that the federations of athletics, water sports, handball, Judo, rugby, volleyball, wrestling and triathlon in the first model and rugby, triathlon and volleyball federations are the most efficient in the second model (Meza et al., 2015). Also, Espitia-Escuer and García-Cebrián (2010) measured the efficiency of football teams in the European Champions League using the DEA method. The selected sample of this research is football teams that played in the Champions League between 2003 and 2007. The research inputs included the skills, characteristics and physical fitness of the players as well as the performance of the manager. The output of the model was also the performances on the sports field during the competitions. The results show that optimal use of resources is necessary to achieve good results in the Champions League. Also, the reason for the failure of the teams that played in

the Champions League in the three seasons from 2003 to 2007 could be the excessive use of resources and not the use of different. In another study, Guzmán-Raja and Guzmán-Raja (2021) evaluated the efficiency of football clubs in the league Spain has paid. They showed that the oldest teams with the most assets achieved the highest efficiency scores.

Soleimani Tepeseri and Ashraf Ganjawii (2018) have evaluated the efficiency of the volleyball Boards of the country's provinces using the data coverage analysis method. The findings of the research show that in 2013, 17 out of 28 provincial Boards are efficient and in 2012, 19 provincial Boards are efficient. Zanjrichi, Khatibi Aghda, and Peymanfar (2015) in research using the data envelopment analysis method, investigated the efficiency of the Iranian sports caravan in 15 periods of the Olympic Games during the years 1948-2012. The findings of the research show that the Iranian sports caravan was the most efficient in the 1956 Olympics and the least efficient in the 1964 Olympics. It is also possible to refer to the researches of Ribeiro and Lima (2012), Kaluba and Marcus (2006) and Haas (2003), pointed out that they determined the efficiency of different areas of sports.

The most recent study related to the present study is the study of (Xu et al., 2024). Chinese researchers chose an integrated approach in evaluating efficiency in the sports industry. They stated that despite China's heavy investment in sports infrastructure development in the past decades, financial resource utilization efficiency (FRUE), regional technology gap (TGR), and total factor productivity change (TFPC) in sports infrastructure development have not been explored and are worth investigating. Their results showed that investments in eastern regions of China were more efficient compared to central and western regions.

As past studies show, efficiency evaluation by DEA method is very helpful to lead systems towards correct and optimal use of resources. In the meantime, knowing the performance indicators is one of the most important tools that can help the organization in making appropriate decisions (Asmild, Paradi, & Pastor, 2009). In this regard, researchers state that the selection of inputs and outputs in DEA models shows a problematic methodological issue. This is one of the reasons why researchers in various studies seek to manipulate input and output sources in order to provide the best evaluation for organizations. In this regard, we can refer to the research of Ren and Liu (2021) that, in their study to measure and analyze the efficiency of public sports services in 31 provinces of China, simultaneously added environmental variables to their data to improve the accuracy of the results. In this regard, the study of Esmaeeli et al. (2023) can also be mentioned, who analyzed productivity through DEA in a new approach. The results of their study showed that efficient branches are not necessarily productive, but productive branches are efficient. In this regard, Calabrese and Falavigna (2024) conducted an inefficiency assessment through a nonparametric econometric technique called data envelopment analysis (DEA). These studies show that by solving optimization problems, DEA makes it possible to draw an efficient frontier, that is, a curve or line on which the most efficient companies are located. In this case, the further you move away from the frontier, the greater the inefficiency of the element in question. However, the main issue in performance management and evaluating the efficiency of input and output indicators. Since DEA is an optimization method for determining the efficiency of each member of a group of entities called decision-making units (DMU) compared to other DMUs in the group (Avilés-Sacoto, Avilés-Sacoto, Cook, & Güemes-Castorena, 2025), it is necessary to pay more attention to these decision-making units. In addition to these mentioned cases, multiple

management approaches in sports organizations should be added to it, as Bhat et al. (2019) states that the most diverse DEA models have been used in sports organizations.

Based on what has been stated, the necessity of evaluating the efficiency of sports organizations and also innovation in the input and output indicators of the decision-making unit is clear. Therefore, in the present study, an attempt has been made to answer the research question with 3 basic approaches derived from the mission of sports boards: What is the efficiency of each sports board over a 4-year period in 3 main approaches?

Materials and Methods

The present study is mathematical-analytical research that aims to investigate the efficiency of sports organizations using a 3-branch model. The research population included sports boards in Yazd province, which were studied as Total population sampling (N=n=45).

In order to conduct the research, a research tool was prepared (Table 1) to evaluate the research structure and also to identify the input and output indicators of the system, using the library study method and also by surveying experts in this field. After validating the input and output indicators by experts, data was collected from the sports boards.

Data Envelopment Analysis (DEA)

The performance evaluation model of similar institutions in a competitive environment using mathematical programming models was first introduced in 1978 by Charnes, Cooper and Rhodes. This model, which was based on returns to a fixed scale, became known as the CCR model. Then in 1984, this model was developed by Banker, Charnes and Cooper for the return to variable scale (BCC) mode. DEA models evaluate the ability of each decision-making unit (DMU) to transform inputs into outputs, which is called efficiency. In more precise words, in such models, according to the position of the studied units, the production possibility set is first obtained by linear programming methods, then this set defines the production possibility border. This border indicates the best place to convert inputs into outputs. This border is called efficient border. Then, units are evaluated based on their distance from this border and efficiency improvement measures are carried out based on getting closer to the border (Fried, Lambrinos, & Tyner, 2004). In the relative measurement of units, Farrell focused on the weighted sum of units to make a virtual unit and proposed this relationship as a common means of measuring technical efficiency:

(1)

$$\text{Efficiency} = \frac{\text{Total weighted of outputs}}{\text{Total } weighted\ of\ inputs}$$

If the goal is to check the efficiency of n units, each of which has m inputs and s outputs, the efficiency of the jth unit (j=1, 2, n) is calculated as follows:

(2)

$$\text{Efficiency of unit j. th} = \frac{\sum_{r=1}^{s} u_r\, y_{rj}}{\sum_{i=1}^{m} v_i\, x_{ij}}$$

x_ (i,j) the i-th input amount for the j-th unit (1, 2, m)

y_ (i, j) rth output rate for the jth unit (1, 2, s)

U_r weight given to rth output (price of rth output)

V_i weight given to i-th input (i-th input cost)

The important thing in the above relationship is that this efficiency measurement tool requires a set of weights that are used for all the units under review. In this regard, two points should be noted: first, the value of all inputs and outputs can be different and it is difficult to measure them; Second, different units may organize their operations in such a way that they provide outputs with different values.

Therefore, it requires different weights in measuring efficiency. To include different methods of measuring weights related to each input and output parameter, several methods have been provided, the most famous and reliable of which are CCR and BCC methods; which is explained below. It is worth mentioning that in this research, the CCR method was used to measure efficiency.

CCR model

In fact, this method seeks to maximize the efficiency according to the given weights; That is, the unknowns here are the weights. This is how we have:

(3)

$$MAX \quad Y_j = \sum_{r=1}^{s} u_r y_{rj}$$

$$s.t \quad X_j = \sum_{i=1}^{m} v_i x_{ij} = 1$$

$$\sum_{r=1}^{s} u_r y_{rl} \leq \sum_{i=1}^{m} v_i x_{il} \quad L = 1, 2, \dots, K$$

$$u_r \geq 0 \quad \forall_r, \quad v_i \geq 0 \ \forall_i$$

The variables of the above problem are the weights and the solution of the problem provides the most suitable and favorable values for the weights of unit j and measures its efficiency. Here the answer is less than one, why? Because $\sum_{i=1}^{m} v_i x_{ij}$ is equal to one for L= j and $\sum_{r=1}^{s} u_r y_{rj}$ is the objective function for L= j. so it is never greater than It does not become one and is always greater than zero because u_r, v_i and also Y_j and X_j are positive. The answer to this problem for the weights is exactly equal to the efficiency for DMU_j.

In this study, the research sample is 34 out of 45 sports Boards that responded to the indicators related to the research variables. 11 other cases that did not provide complete answers were excluded from the research process.

Inputs and outputs of research

To evaluate efficiency, two categories of approach and method should be mentioned. It is worth noting that the input variables for each approach can be somewhat different depending on data access. It is noteworthy there is no consensus on the input and output variables that should be used to measure their performance, and DEA studies have been expanded using diverse inputs and outputs (Espitia-Escuer & Garcia-Cebrian, 2020). Therefore, in different studies, the input and output variables are different. As a result, the inputs and outputs used in the current research were determined and compiled with a new approach in 3 branches based on literature studies and expert surveys as described in Table 1.

Table 1. Inputs and outputs of research

Approach	Input	output
Elite sport	1- Number of athletes (men and women) 2- number of coaches (men and women) 3- number of existing clubs and teams (men and women)	1- Number of elite athletes (men and women) 2- number of medals (men and women) 3- Number of athletes sent to competitions (men and women) 4- Hosting sports competitions (men and women) 5- number of people invited to the national team or members of the national team (men and women) 6- number of organized leagues (men and women) 7- number of teams participating in the leagues

		and the number of teams in the premier league, 1st and other league categories (men and women) 8- Players present in the teams of professional leagues of the country (men and women)
human resources	1- number of referee (men and women) 2- number of coaches (men and women)	1- number of referees has been upgraded 2- number of upgraded coaches 3- number of referee instructors and supervisors at higher levels of the province 4- number of refereeing courses 5- number of coaching courses
Administrative - financial	1- Managers and employees 2- size of the Board office or building 3- amount of allocated resources	1- number of board meetings 2- number of departments, assemblies and subcommittees 3- number of volunteers who are members of various committees and departments 4- number of active city councils of the subcategory 5- number of assemblies (election and non-election) 6- number of financial resources attracted and acquired

Results

According to the findings of the research, the state of efficiency of sports Boards of Yazd province is presented in tables 2 to 6. Table 2 shows the results of calculating the efficiency of sports Boards in all three administrative-financial, human resources and Elite sport approaches during the research period using the CCR method. Due to the great variety of sports Boards and in order to answer the research questions, the analysis of the results is presented in the following separate tables.

Table 2. Efficiency of sports Boards

Approach	**sports Board**	**years**				**Approach**	**sports Board**	**years**			
		1	2	3	4			1	2	3	4
Administrative-financial	Squash	1	1	1	1	Human resources	Rural sports	1	1	1	1
Elite sport	Squash	1	1	1	1	Administrative-financial	Gymnastics	-	-	1	0.98
Human resources	Squash	1	1	1	1	Elite sport	Gymnastics	-	-	-	1
Human resources	skate	-	-	0.2	0.19	Human resources	Gymnastics	-	-	0.9	0.52
Elite sport	Sports associations	-	-	-	1	Elite sport	Chess	1	1	1	1
human resources	Sports associations	-	-	-	1	human resources	Chess	0.82	0.84	0.21	0.67
Elite sport	Basketball	0.12	1	1	0.92	Elite sport	Fencing	-	-	1	1
human resources	Basketball	0.78	0.98	0.3	0.22	human resources	Fencing	1	0.42	1	0.35
human resources	boxing	1	-	-	1	Administrative-financial	Aquatics	0.71	0.7	1	1
Administrative-financial	Special patients	0.95	1	0.49	0.77	Elite sport	Aquatics	1	1	1	0.74
Elite sport	Special	-	0.8	1	0.9	human	Aquatics	0.4	0.35	0.15	0.03

	patients					resources					
human resources	Special patients	-	-	-	1	Elite sport	Rowing	-	-	-	1
Elite sport	taekwondo	1	-	-	-	Human resources	Rowing	-	-	1	1
Administrative-financial	Table Tennis	1	1	1	1	Human resources	Karate	1	1	1	0.72
Elite sport	Table Tennis	-	-	0.78	0.39	Administrative-financial	Kabaddi	1	1	1	1
Human resources	Table Tennis	1	1	0.39	0.41	Human resources	wrestling	-	-	0.35	0.32
Administrative-financial	Shooting	0.67	0.73	0.48	0.42	Administrative-financial	Kung Fu	1	1	1	1
Human resources	Shooting	1	0.50	0.42	0.17	Elite sport	Kung Fu	0.59	1	1	0.70
Elite sport	Archery	1	1	1	0.47	Human resources	Kung Fu	0.47	1	1	0.99
Human resources	Archery	-	-	0.36	-	Administrative-financial	Sport for all	1	1	1	1
Elite sport	The enabled	1	1	1	1	Elite sport	Sport for all	0.47	0.93	0.55	0.25
Human resources	Judo	0.12	0.83	0.66	1	Human resources	Sport for all	1	-	-	-
Elite sport	Cycling	-	-	-	1	Elite sport	Weightlifting	1	1	1	1
Human resources	Cycling	-	-	-	1	Human resources	Weightlifting	-	-	-	0.63
Elite sport	Automobile and Motorcycle	1	1	1	1						

In order to make it possible to compare data and compare the efficiency of sports Boards in different approaches, sports Boards were divided into four categories. The first category is the Boards that have been highly efficient throughout the four-year period (Table 3), the second category is the Boards that have had low efficiency during the entire four-year period (Table 4), and the other two categories include the Boards whose efficiency has been increasing or decreasing (Tables 5 and 6).

Table 3. Boards with high efficiency in the four-year period

Approach	sports Board	first year	second year	third year	fourth year
Elite sport	Automobile and Motorcycle	1	1	1	1
	Squash	1	1	1	1
	Weightlifting	1	1	1	1
	The enabled	1	1	1	1
	Chess	1	1	1	1
Administrative-financial	Table Tennis	1	1	1	1
	Sport for all	1	1	1	1
	Squash	1	1	1	1
	Kung Fu	1	1	1	1
	Kabaddi	1	1	1	1
Human resources	Squash	1	1	1	1
	Rural sports	1	1	1	1

The results of Table 3 show that among the Boards with high efficiency in all three approaches, only the Squash Board had complete relative efficiency in all three approaches and in all periods. A significant issue in the analyzed information is that although 5 Boards were efficient in the elite sport and administrative-financial approach during the 4-year period, only two Boards were relatively efficient in the human resources approach. This shows the weakness of the human resources field of sports Boards in Yazd province.

Table 4. Boards with low efficiency and volatility in the four-year period

Approach	sports Board	first year	second year	third year	fourth year
Elite sport	Sport for all	0.93	0.55	0.25	0.47
	Table Tennis	-	-	0.78	0.39
	Kung Fu	0.59	1	1	0.70
	Special patients	-	0.80	1	0.9
	Basketball	0.12	1	1	0.92
Administrative-financial	Shooting	0.73	0.48	0.42	0.66
	Special patients	1	0.49	0.77	0.95
	Gymnastics	-	-	1	0.98
Human resources	Basketball	0.98	0.30	0.22	0.78
	Aquatics	0.35	0.15	0.03	0.4
	Fencing	1	0.42	1	0.35
	Skate	-	-	0.2	0.19
	Weightlifting	-	-	-	-0.63
	Archery	-	-	0.36	-
	Kung Fu	0.47	1	1	0.99
	Boxing	1	-	-	1
	Chess	0.84	0.21	0.67	0.82
	Judo	0.83	0.66	1	0.12
	Gymnastics	-	-	0.90	0.52
	Wrestling	-	-	0.35	0.31

As the results of Table 4 show, the Boards of sports for all, table tennis and kung fu, which were among the Boards that were among the most efficient in the administrative-financial approach, were the least efficient in the Elite sport approach. This means that administrative-financial efficiency cannot guarantee Elite sport efficiency.

Table 5. Boards that efficiency has increased in the four-year period

Approach	sports Board	first year	second year	third year	fourth year
Elite sport	Fencing	-	-	1	1
	Gymnastics	-	-	-	1
	Cycling	-	-	-	1
	Sports associations	-	-	-	1
	Rowing	-	-	-	1
Administrative-financial	Aquatics	0.71	0.7	1	1
Human resources	Rowing	-	-	1	1
	Cycling	-	-	-	1
	Special patients	-	-	-	1
	Sports associations	-	-	-	1

The results presented in Table 5 show the sports Boards whose efficiency has improved. In fact, it can be said that the Boards of rowing, Cycling, special patients and sports associations are among the Boards that have improved in terms of Elite sport efficiency and human resources; In other words, the improvement in the situation of human resources and the Elite sport of these delegations have happened at the same time.

Table 6. Boards that efficiency has decreased in the four-year period

Approach	sports Board	first year	second year	third year	fourth year
Elite sport	Taekwondo	1	-	-	-
	Aquatics	1	1	1	0.74
	Archery	1	1	1	0.47
Human resources	Shooting	1	0.5	0.42	0.17
	Sport for all	1	-	-	-
	Table Tennis	1	1	0.39	0.41
	Karate	1	1	1	0.72

The results shown in Table 6 show the Boards whose efficiency decreased during the research period. The obtained information shows that Taekwondo, Archery and Archery have experienced a significant decrease in terms of Elite sports. At the same time, the Boards that have decreased efficiency in human resources are other Boards, and there is no common Board between these two categories**.**

Discussion

Organizational efficiency measurement, along

with the application of analytical techniques and diagnostic tools, has become an important question for managers and researchers (Kasale, Winand, & Robinson, 2018). Hence, there is a need to analyze the efficiency of these organizations to determine their success levels in relation to their performance and budget received (Hong, 2014; Miragaia, Ferreira, & Vieira, 2023). Therefore, in this research, which has used the three approaches of championship, human resources and administrative-financial as the core of the evaluation, it has been tried to be a small step in the direction of using research in operations to achieve the improvement of the performance of sports organizations.

The results (Table3) show that the Squash Board was the most efficient in all three approaches and in all years. On the other hand, only five Boards have been efficient in the leadership and financial-administrative approach during the four-year period, and only two Boards have been relatively efficient in the human resources approach. This shows that Yazd province is weak in the field of human resources of sports Boards. Nowadays, human resources play a crucial role in problem-solving and efficient management of human resources is essential for organizational success (Mousavi, Gholampour, & Fakhri, 2024). Miragaia et al. (2023) define human resources as one of the important organizational capacities as a tool for using its internal and external resources within the scope of achieving goals. In a similar study, Farahani et al. (2019) and Ren and Liu (2021), have pointed out in their study the importance of human resources in the success of organizations and sports events. Therefore, it seems that it is necessary to formulate strategic plans for the expansion and promotion of human resources.

The next section presents the results for Sport Boards that performed poorly over the entire four-year period (Table 4). What the results of this table show is that the greatest inefficiency is for individual sports committees. This issue is important because the history of sports in Yazd province shows that the greatest successes and medals have been for individual disciplines. This issue has also been examined for the annual decline in the efficiency of sports Boards.

One of the practical results of the current research is to present the efficiency status of sports Boards in different years. Table 5 shows the increase in efficiency and Table 6 shows the decrease in efficiency of sports Boards of the province during the years under review. As can be seen in Table 5, some Sports Boards have been able to improve their efficiency over the 4-year period. However, what is notable is the small number of sports boards that have improved their efficiency in the administrative-financial area. In this regard, Farahani et al. (2019) state that sports organizations that use a lot of resources to achieve their goals actually use some of these resources incorrectly, and this misuse of financial, physical, and human resources causes their inefficiency in providing products and services to society. Effective allocation of financial resources is crucial for social well-being and economic sustainability .

Given the multifaceted nature of the impact of sport development, efficient allocation of financial resources is of great importance (Xu et al., 2024). It seems that by optimizing the return on each financial investment, services can achieve higher standards while avoiding additional costs, thereby ensuring long-term sustainability. Therefore, high efficiency in this area, by integrating different needs and preferences, strengthens the sense of belonging among stakeholders, and thus contributes to community participation.

Following the results of Table 5, Table 6 shows the sports teams that had a significant drop in their performance. In fact, it can be said that the sports Boards of Rowing, Cycling, special patients and sports associations are the Boards whose efficiency has improved in terms of Elite

sport approaches and human resources and, efficiency of Aquatics, taekwondo and archery sports Boards have decreased significantly from the Elite sport approach. In the discussion of elite sports, it can be stated that sports organizations can both enhance their brand by looking at this area and be a reason for more athletes to enter that sport, which can also increase the resilience of elite sports organizations (Fasey, Sarkar, Wagstaff, & Johnston, 2021). Studies show that Yazd province has not been able to establish a good position for itself elite sports. Looking at the results of this study, it is clear that a large part of the sports boards of Yazd province are not efficient in this area. In this regard, Backman, Hejl, Henriksen, and Zettler (2024) state that It is important to acknowledge that elite sports is a specific context and we have no choice but to pay attention to the key performance indicators of the development of elite sports.

Finally, we return to Table 2, which shows the efficiency of sports boards with annual fluctuations. These findings can be the basis for analyzing management factors in the three dimensions of this research. As Gutiérrez and Lozano (2012) state that continuity in performance evaluation as well as its feedback cycle can lead to improved performance and productivity, it is necessary for sports managers of the province to determine the cause of performance fluctuations observed in the present study among sports Boards. Examine and apply the factors in the sports management cycle of the province.

On the other hand, the findings and results of the research show that the efficiency obtained from the CCR method shows that more sports Boards are more efficient. It can be pointed out that by changing the input and output, it can be expected that the sports Boards of Yazd province will increase their efficiency. For example, the increase of sports teams and clubs will lead to the discovery of more talents and as a result, the number of people sent to sports competitions and national teams will increase. And this can improve the organization's performance in winning more medals. As Halkos and Tzeremes (2013) stated that the number of medals won and the weight of each category (gold, silver or bronze) shows the success achieved by the club and thus reflects the investments made. Therefore, in order to become more efficient and as a result, managers should direct their resources and focus to the input and output variables used in the research.

Conclusion

From the perspective of the literature, this study can contribute to a better understanding of efficiency, especially in sports organizations. More detailed knowledge of governance models and how to describe the decision-making process in this type of organization is still unknown, and this study has tried to contribute in this direction. Also, this study has shown that these types of organizations are still highly dependent on government budgets, and this has positive or negative effects on their efficiency, and this shows that in the three sectors of championship sports, human resources, and administrative-financial management, Sports Boards should involve different stakeholders for greater commitment to the community. Since the present study has evaluated the efficiency with a comprehensive approach, the presented results can be both a basis for the attention of managers in the distribution and allocation of resources and a basis for sports Boards of the province to improve their weaknesses according to the evaluation indicators. One of the most practical consequences of this model can be expressed as the fair distribution of financial resources based on the efficiency of each sports board. It can also be the basis of the reward system in the sports management system. Also, the presented model and indicators can be a suitable model for evaluating the efficiency of other sports organizations. Of course, considering that the

input and output indicators are the main component of an evaluation system, and as the findings of this research showed, by changing the inputs and outputs of the model, different results can be observed in improving the performance, it is suggested that based on the mission of each One of the studied organizations, the indicators of the current research model are reviewed through a Delphi study.

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