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Evaluating the Relative Efficiency of Iran's Tourism Industry: A Non-Parametric Approach

Ali Rahnama[1], Morteza Yaghoubi[2], Hamideh Khaksar Astaneh[*3]

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Abstract

Tourism is one of the most invaluable industries in the world, attracting millions of foreign tourists every year. In terms of historical and cultural attractions, Iran is among top 10 countries, however, it has a small share of foreign tourist's arrival. Iran's tourism boom depends on providing the suitable conditions for the arrival of tourists, included service elements (i.e. hotels and travel agencies) and infrastructure for aviation, rail, road and naval. Inefficient use of these fundamental factors is known as the major obstacles to growth and development of tourism industry. Accordingly, we evaluate the tourism efficiency of Iran provinces along with their full ranking, based on a data envelopment analysis. The results from the weighted model indicate that Khorasan Razavi, Qom, West Azarbaijan, East Azarbaijan, Kurdistan and Isfahan provinces have the highest efficient scores. North Khorasan, South Khorasan, Golestan, Chaharmahal and Bakhtiari, Semnan and Bushehr also have the lowest scores, respectively.

Keywords: Relative Efficiency, Iran Tourism, Full Ranking, Data Envelopment Analysis.

JEL Classification: O11, O24, P25, P26.

1. Introduction

The twenty-first century is time to take the advantage of valuable business opportunities in tourism industry (Jackson, 2006). In 2017, international tourist arrivals recorded the milestone of 1.322 billion,

1. Department of Tourism Economics, Iranian Academic Center for Education, Culture and Research (ACECR), Khorasane razavi, Iran (a.rahnama@acecr.ac.ir).

2. Department of Agricultural Economics, Faculty of Agriculture, University of Torbat Heydarieh, Khorasane razavi, Iran (yaqubi@torbath.ac.ir).

3. Department of Tourism Economics, Iranian Academic Center for Education, Culture and Research (ACECR), Khorasane razavi, Iran (Corresponding Author: khaksar@acecr.ac.ir).

expected to continue in 2018 at a rate of 4%-5% (UNWTO, 2017). Clearly, in the visit process, information acquisition, planning, preparation at the initial point of travel, traveling and staying in a destination, buying, hosting and guest interaction, returning to initial point of travel, and reviewing travel memories would help to improve countries national income (Arsal et al., 2010; Middleton, 2009). These series of actions and activities among tourists, providers of tourism products and services, policymakers and hosts will keep the industry's profit engine active.

Tourism activities are one of the most dynamic profitable activities, considered by both government planners and private companies (Vahedpour and Jafari, 2011), mainly because the money paid by a tourist for food and accommodation, travel, recreation, buying souvenirs and goods and sightseeing help the economy to develop through bringing currency to the host country (Swyngedouw et al., 2002). As more tourists enter, more jobs are created, and this can be an opportunity especially for the countries with young population (Sabbagh Kermani et al., 2000).

Developing tourism has led tours to become one of the world's largest industries, attracting the attention of planners (Liu et al., 2012). This industry has become one of the most potent economic activities (Alipour and Kaboudi, 2011) which, with its powerful force, causes positive changes in economies of both developed and less developed countries (Yang and Fik, 2014).

Given World Tourism and Travel Council (WTTC) and Iranian Statistical Center (ISC) reports, the share of tourism in Iran GDP in 2014 has been 1.6% so that 5.81% of this income is related to domestic tourists and the rest to international tourism. In 2013, it provided 2.2% GDP i.e., 15 billion Tomans directly and 41 billion Tomans indirectly. In addition to its impact on GDP, it has been also influential in the economy. In 2013, tourism provided one billion Rials with a revenue share of 3.3 percent in Iran's employment. The revenue in 2014 grew to 794 billion Rials. In 2013, the tourism industry was only 2.9 percent of Iranian investments, but in 2014, the investment reached 10 billion Tomans. Depite these growths, given tourism potentials, Iran are far away from its origin position. Efficient use of tourist resources requires comprehensive and scientific looks along

with governmental supervision, management and planning (Delbari and Davoodi, 2012).

Despite the immense potencial of tourism industry in development and prosperity of Iran economy, the major academic efforts toward tourism industry development in the last decade have mainly focused on incentive and promotional approaches that is a demand-driven prospective. Accordingly, we aim to identify optimal solutions to improve Iran tourism industry position from a supply-driven prospective. To do this end, we assess relative industry efficiency of Iran provinces along with their full ranking.

2. Literature Review

2.1 Efficiency

Efficiency, in its general sense, means reaching a set of desired goals (Fare et al., 1986). Technical efficiency means the ability of an enterprise to achieve maximum output using a specified amount, and allocative efficiency means the ability of an enterprise to utilize the optimal combination of production sources with respect to inputs (Mirzaei et al., 2016). In order to obtain overall efficiency, the technical efficiency level should be multiplied by the allocation efficiency (Alam et al., 2010).

Efficiency can be defined as reaching the potential technical possibilities that any enterprise can reach. Such a definition may be technically possible from a theoretical approach but in practice its measuring is impossible. The second method is the best practices observed the behavior of enterprise in the industry. Thus, enterprises are compared in terms of their performance (Emami Meyboudi, 2000). This perception of efficiency has led to use the practical measurement methods and has been created the concept of frontier functionss.

But these estimates compute the product average; the frontier production function is an attempt to fill the theoretical and practical work interval with consideration of frontier observations for the estimation of the production function. Empirically, obtaining the frontier functions is carried out in a parametric and nonparametric method. In nonparametric methods, random effects are not considered in performance measurement but in the parametric method, calculations are based on estimates of production functions (Saberyfar, 2010). In following, these methods are explained.

2.2 Parametric Methods

In parametric methods, a particular form of a production function is initially considered (Zamanian et al., 2013). Then, the unknown coefficients (parameters) of that function are estimated using a deterministic frontier production function, a deterministic statistical frontier production function, a stochastical frontier production function or a profit function. Parametric methods are suitable for evaluating the efficiency of production units (that have one or more than one output) if the outputs can be converted to each other or to a single same output unit. But suppose we want to compare two service units in education in terms of efficiency, and these units have more than one output.

The parametric method was first introduced by Lovell and Schmit, and Bayer, 1988; Shahabinejad et al., 2013. A production function determines the relationship between the input and output, so that, a specific production function is considered as a default. The Cobb Douglas function is one of the functions that are frequently used to estimate the production function. The Cobb Douglas function has the property of transformation into a logarithmic linear function, so estimating its coefficients is possible by solving a linear programming model. Parametric methods include stochastic frontier approach (SFA), thick frontier approach (TFA), and devoid function approach (DFA) (Alem et al., 2010).

2.3 Nonparametric Methods

In 1957, Farrell introduced a nonparametric approach to estimate efficiency for the first time. He saw the number of inputs and outputs of the units (instead of estimating the production function) and then considered the frontier for these units, and this boundary, which is called the efficient boundary, is a criterion for the evaluation of efficiency (Alem et al., 2010).

In this method, the efficiency of enterprises is evaluated using the mathematical programming techniques; however, it is not necessary to estimate the production function. If the concerned enterprise has several different outputs, this method will not be facing a problem in evaluating performance (Sabuhi et al., 2012). The Data Envelopment Analysis (DEA) is a nonparametric approach, formulated by mathematical programming techniques.

2.4 Data Envelopment Analysis

DEA was introduced by Edward Rhodes (1978) in collaboration with Charles and Cooper in a paper, later called CCR. By converting multiple inputs and outputs into one input and one output, it uses the mathematical optimization to generalize the efficiency of an input and output. The work on units that include an input (X) and an output (Y) is the output/input ratio (Y / X). Now, if there are multiple inputs and multiple outputs in this unit or organization, then the coefficients should be assigned to inputs and outputs. In this case, the efficiency is the sum of the outputs on the total inputs. The CCR model was known for its ability to overcome the problem of calculating coefficients.

DEA is a nonparametric technique. If a decision unit has one input and one output, then the output/input ratio is introduced as the efficiency of that unit. One of the advantages of nonparametric methods is that these methods do not take a definite form for the production function and work directly with the observed data.

The CCR was based on minimizing the factors of production and assuming constant returns to scale. In 1984, with the consideration of the variable returns to scale, Bunker, Charles and Cooper, later called BCC, expanded the capability metering (Saberifar, 2010).

2.5 Background Research

There is an extensive litruture review seek the various aspects of tourism industry performance. Mahmoodi et al. (2016) studied the performance of the hotel industry in Yazd province, Iran. To determine hotels efficiency, they used both CCR and BCC models. The findings showed that 18.5% of the sample hotels, based on the CCR model and 29.6% based on the BCC model, are efficient and the rest are ineffective. Akbari et al. (2016) investigated the relative tourism efficiency of the cities of East Azarbaijan province using the DEA. The results showed Tabriz, Maragheh, and Mianeh are the most efficient cities in the province of East Azarbaijan, and the cities of Hashtrood, Varzaghan, and Charoimagh have the least efficient in terms of tourism infrastructure. They concluded that the main solution to inequalities and the inadequacy of areas to the limit of efficiency is to adhere to the standards of social justice in all dimensions and to map the efficient cities from the performance dimension in terms of

the infrastructure of tourism. Hakaki et al. (2015) determined the efficiency and prioritization of hotels by DEA. The number of rooms, the number of beds and the number of employees are considered as inputs and income resulting from the accommodation of the rooms and the number of guests as outputs of the model. Nouri and Taqizadeh (2014) prioritized the tourism areas of Kermanshah province for investment. TOPSIS multi-criteria decision-making technique has been used to select the best option that is less risky. The results showed that the sample area of tourism in Piran Waterfall, Sarab Golin, and Chaharqapi are the most representative areas of Qasr Shirin Tourism Center. Rahnama and Khaksar Astaneh (2014) assessed the efficiency of hotel industry in Iran's provinces trough a SBM-DEA model. The results showed that the provinces of Ardebil, Kermanshah, Gilan, Khorasan Razavi, Tehran, and Hamedan have an efficient hotel industry. Barros et al. (2011) examined performance of French destinations by using DEA. In the context of France, such analysis takes an additional importance, especially as the country is expected to face a decrease in its tourism competitiveness. A discussion in terms of D-attraction and E-attraction is also proposed and policy recommendations are derived. Pulina et al. (2010) evaluated the relationship between size and efficiency of the Italian hospitality sector by a window of DEA approach. The empirical results indicate that Sardinia can be considered as a region "falling further behind", whereas some regions in the North and Centre of Italy can be regarded as "moving ahead". Deng (2007) assessed Taiwanese hot springs tourism using Importance-Performance Analysis (IPA) approach. A Taiwanese hot springs tourism case is presented to demonstrate the implementation of the proposed revised IPA. The effective and appropriate action direction for each satisfaction attribute acquired by applying the revised IPA thus enables business managers to achieve a competitive advantage. Cracolici et al. (2008) assessed tourism competitiveness through analyzing destination efficiency. They deploy a measure of tourist site competitiveness in terms of its technical efficiency using parametric and non-parametric methods, a stochastic production function and data envelopment analysis, respectively. Barros (2005) measured the efficiency of hotel sector in Portugal. They conclude identifying the efficient hotels in a

sample help o find the slacks in inputs and outputs of the inefficient hotels and the peer group of efficient hotels, and therefore the data envelopment analysis stands out as one of the most promising techniques to aid the improvement of efficiency. Gossling et al. (2005) had a comprehensive review on eco-efficiency of tourism. They analyze the interplay of environmental damage and economic gains within the context of tourism. Carbon dioxide-equivalent emissions were assessed in relation to the revenues generated, allowing for conclusions about the eco-efficiency of tourism. Haber and Reichel (2005) evaluated tourism industry through identifying performance measures of small ventures. The findings, based on a cluster sample of 305 small tourism venture owner-managers that were interviewed face to face, supported the research proposition. The study emphasizes the importance of mapping the venture's achievements, allocating resources, and developing managerial skills to improve its performance and ability to survive in the long run. Using data envelopment analysis, Hwang and Chen (2003) measured the hotel managerial efficiency changes in Taiwan. The results revealed that there was a significant difference in efficiency change due to the difference in sources of customers and management styles. In addition, this paper showed that the managerial efficiency of international tourist hotels is related to the level of internationalization of hotels. Moreover, the entire industry can be partitioned into six clusters based on relative managerial efficiency and efficiency change. Effective management strategies are developed specifically for each of the six clusters of the hotel.

3. Methodology

Our methodology is based on DEA. To modeling our value judgements in DEA, we use a set of input weights determined in accordance with Iran truism industry (see Table 2).

An input oriented measure quantifies the input reduction, necessary to become efficient holding the outputs constant.

Given that basic CCR and BCC models cannot have a full rank of the provinces, we use the approach of Anderson and Peterson (1993). The advantage of this approach is to identify the best unit of performance. This model estimates how much an efficient unit can

increase (reduce) its inputs and still remain effective. In fact, this approach is similar to the DEA model, but the evaluated unit is no longer belong to the reference set. This can be shown as follows:

$$Min\ \theta - \varepsilon \left[\Sigma_i^m S_i^- + \Sigma_r^s S_r^+ \right]$$

$$S.t.$$

$$\Sigma^n \lambda_j y_{rj} - S_r^+ = y_{rp} \ , r = 1, \dots, S$$

$$j=1, \neq p$$

$$\Sigma^n \lambda_j x_{ij} + S_i^- = \theta X_{ip}, \ i = 1, \dots, m$$

$$j=1, \neq p$$

$$\Sigma_j^n \lambda_j = 1$$

$$\lambda_j \geq 0 \ , j = 1, \dots, n$$

$$S_i^-, S_r^+ \geq 0, \ r = 1, \dots, s \ , \ i = 1, \dots, m$$

Whereas, the x_{ij} and y_{rj} variables are respectively the input i and the output r of the j decision making unit (DMU). The variable s is the slack of inputs and s^+ is the slack of the output. In order to solve the problem of zero weights, a non-Archimedean number ε is used such that this number as a lower bound for the weights of input and output prevents them from being zeroed.

These efficiency scores are relative and the efficiency boundary is created by a convex combination of the provinces. Any province that is located on the above boundary is efficient, otherwise, it is ineffective. For any inefficient province, an efficient or a combination of two or more efficient provinces is introduced as a reference. This model is based on the assumption that if province A can produce more output than province B with the same input, province A is more efficient than B. If province A can produce a certain amount of output at a specified rate, it is expected that other similar provinces can have the same output with a given input with the same input, the ability to generate a certain output. Again, there is a hope that other provinces are able to do this. Here, provinces "A" and "B" and other provinces can be mixed and from that, a province is made by combining the

inputs and outputs of these provinces. But since there is no province with the characteristics of this compound, a virtual province will be built. Finding the best virtual province of the combination of all real province is the basis of data envelopment analysis. Now, if this province is better than the desired province, that is, with the same entities equal to the unit studied, the virtual unit will provide more outsourcing or need less input for the same outputs than the input province.

4. Results and Discussion

Given data access level, the following provinces were considered in our analysis: East Azarbaijan, Isfahan, Khorasan Razavi, Khuzestan, Qom, Kurdistan, Golestan, Gilan, Hamedan, Yazd, West Azarbaijan, Bushehr, Chaharmahal and Bakhtiari, South Khorasan, North Khorasan, Zanjan, Semnan, Kohkiluyeh and Boyerahmad, Lorestan and Markazi.

The data have been collected from Iran Statistical Center and statistical yearbooks of Iran Provinces. These information includes outbound tourists, provincial budget, total resorts, national and international flights, road infrastructure, the number of agencies, the number of hotels and restaurants, and the area of the national parks. To consider optimal factors in our modeling, two points were noticed; data avalability and research bachground. Selected data were summarized in Table 1.

In Table 1, "outbound tourists" refers to the number of outbound tourists entering the province in terms of entrance boundaries. The "provincial budget" is the annual financial statement of the province, financed by the general income of each province. The "total residences" variable represents the total number of hotels and hostels in each province. "Total flights" shows the total number of inbound and outbound flights arrived in the provinces. The "road infrastructure" is calculated through the length of the main routes divided by the area of each province in 2011. The variable "total places" shows the total number of places, museums, and monuments. These data are derived from the Statistical Center of Iran and the Statistical Yearbooks of the Provinces of Iran in 2012. The selection of these variables is in accordance with the literature study and modifies them in according to

the relevant experts. Regarding access to more comprehensive information, 2012 was selected for analysis. However, there was no significant change in inputs and outputs in subsequent years. Considering the fact that the variables selected as inputs do not have the same importance, the relative importance of each variable was determined and considered in the model (Table 2).

Table 1: Descriptive Analysis of Production Factors in Non-Parametric Building PPS

Variable	Type	Min	Max	Mean	Total
Outbound tourists	Output	63	268655	28795.4	575908
Provincial budget	Input	11529	121535	55804.75	1116095
Total resorts	Input	15	866	179.445	3277
Total flights	Input	59	21894	2608.65	52173
Road infrastructure	Input	0.0069	0.1001	0.0360	0.7207
Total Places	Input	60	1559	368.15	7363

Source: Extracted from the Iran Statistical Center and Statistical Yearbooks of Iran Provinces

Table 2: Relative Importance of Factors Affecting the Number of Outbound Tourists

	Provincial budget	Total resorts	Road Infrastructure	Total places	Total flights
Weight	0.15	0.21	0.18	0.16	0.3

Another issue, to calculate technical efficiency, is control of those factors influencing the number of outbound tourists that should be considered in building Production Possibility Set (PPS). In general, it is assumed that the input (s) and output (s) are all discretionary, i.e., in control, and it is possible to reduce or increase them in line with optimal planning and achieving the best performance. It is visible, at least in the long run, the possibility of controlling the number of flights, the infrastructure status, the provincial budget, and even the number of residences. Although the number of Holy places, museums and historical monuments, in particular, are not exactly discretionary variables. This was also considered in our modeling.

We also consider Constant Return to Scale (CRS) hypothesis which implies the long-term conditions, means all factors of production are

available. It indicates output increases by that same proportional change as all inputs change. In such a situation, each province is considered at the lowest point of the average long-term cost of its tourism industry.

According to Table 1, the total number of outbound tourists in 20 major tourist destinations of Iran in 2011 is much less than one million. According to the World Bank database, the total number of outbound tourists in the world has been estimated at about 1 billion people a year. Among them, France, the United States, and China ranked first to third, respectively, and Spain, Italy, Turkey, England, Germany, Russia, and Malaysia ranked fourth to tenth, respectively.

Despite the huge potential, Iran has been ranked 55th in the year under review based on the number of outbound tourists. Probably, the main external reasons for this issue should be sought in severe sanctions (Farahani & Shabani, 2013; Pratt & Alizadeh, 2017).

According to Table 1, the average arrival of outbound tourists to each province is about 29,000. The smallest number of outbound tourists was identified in North Khorasan, South Khorasan, and Golestan provinces, respectively. The provinces of Khorasan Razavi, Qom, and East Azarbaijan were ranked first to third through hosting 268655, 90237 and 47000 outbound tourists, respectively. The highest number of residences belongs to Guilan province and the least ones belong to Kohkiluyeh and Boyerahmad province, respectively. Markazi province has been the lowest number of foreign flights, and Khorasan Razavi province has been the most one. The total number of holy places, museums, and the number of monuments are 60 places in West Azarbaijan and 1559 places in Zanjan province, which ranked respectively in the lowest and highest rank respectively.

Table 3 and 4 show the results of the technical efficiency of the tourism industry in Iran. According to the results of the non-weighted model, the provinces of East Azarbaijan, Esfahan, Khorasan Razavi, Khuzestan, and Qom are relatively best efficient provinces, respectively; however, Markazi, Lorestan, Kohkiluyeh & Boyerahmad, Semnan, and Zanjan, have the least effective, respectively. However, the performance results are slightly different in the weighted model that considers the relative importance of each of the factors affecting the number of inbound tourists. In this model, the provinces of Khorasan

Razavi, Qom, West Azarbaijan, East Azarbaijan, Kurdistan, and Isfahan have the highest performance respectively, and the provinces of North Khorasan, South Khorasan, Golestan, Chaharmahal & Bakhtiari, Semnan and Bushehr the lowest one, respectively. The average efficiency scores in the tourism industry are about 21% in terms of unweighted model and 22% in terms of the weighted model; however, the different ranking of the two models (Table 3 and Table 4) shows that the relative importance of each input has to be considered in practical research. The results of the weighted model are significantly more reliable. According to the results of both models, two provinces of Khorasan Razavi and Qom are quite efficient and can, therefore, be considered as benchmarking. Qom is the reference of eighteen provinces; however, Khorasan Razavi is the reference of only two provinces. To improve the performance of the tourism industry, West Azerbaijan and Kurdistan should pattern both Khorasan Razavi and Qom. However, Qom has a much heavier share than Khorasan Razavi. The pattern of other provinces is Qom.

Table 3: Ranking Tourism Industry of Iran's Provinces Using a *Non-Weighted* Super-Efficiency DEA Model

Rank	Province	TSE	Rank	Province	TSE
1	*Qom*	2295.05%	11	*Khuzestan*	6.49%
2	*Khorasan Razavi*	517.20%	12	*Lorestan*	4.89%
3	*Kurdistan*	65.57%	13	*Kohgiloyeh and Boyerahmad*	4.67%
4	*East Azarbaijan*	51.93%	14	*Markazi*	4.44%
5	*West Azerbaijan*	43.90%	15	*Bushehr*	4.32%
6	*Esfahan*	33.71%	16	*Semnan*	3.65%
7	*Yazd*	32.36%	17	*Chaharmahal va Bakhtiari*	2.92%
8	*Hamedan*	21.80%	18	*Golestan*	2.24%
9	*Gilan*	16.96%	19	*South khorasan*	1.70%
10	*Zanjan*	10.94%	20	*North khorasan*	0.30%

TSE: Technical Super Efficiency scores

Table 4: Ranking Tourism Industry of Iran's Provinces Using a *Weighting Scheme* in Super-Efficiency DEA Model

Rank	Province	TSE	Rank	Province	TSE
1	*Qom*	2295.05%	11	*Bushehr*	3.78%
2	*Khorasan Razavi*	364.07%	12	*Semnan*	3.65%
3	*Kurdistan*	65.57%	13	*Khuzestan*	3.16%
4	*East Azarbaijan*	34.21%	14	*Markazi*	2.60%
5	*Yazd*	26.10%	15	*Lorestan*	2.51%
6	*Esfahan*	21.56%	16	*South khorasan*	1.45%
7	*Gilan*	16.96%	17	*Chaharmahal va Bakhtiari*	1.21%
8	*West Azerbaijan*	9.49%	18	*Kohgiloyeh and Boyerahmad*	0.74%
9	*Hamedan*	7.19%	19	*Golestan*	0.32%
10	*Zanjan*	7.07%	20	*North Khorasan*	0.13%

TSE: Technical Super Efficiency scores

Table 5 shows causes of tourism inefficiency. For example, the tourism inefficiency of the West Azarbaijan is rooted in the inappropriate use of tourist resorts and provincial budget, and the inefficiency of East Azarbaijan is due to inappropriate roads infrastructure, flights, and the provincial budget. Gilan, North Khorasan, and Kurdistan have had the best use of public funds. In terms of the use of residences, only three provinces of Kurdistan, Khuzestan, and West Azarbaijan have been undesirable, and the inefficiency of other provinces is related to other factors.

The reported figures in Table 5 show the main causes of inefficiency in Iran's tourism industry as inefficient use of operating system cost credits and the lack of optimal use of credits for the capital assets of executive agencies. Except for Gilan, other inefficient provinces did not use the state budget well. Public sector executive agencies are usually inefficient "because of the environment in which they operate, as measured by the soft budget constraint" (Bartel and Harrison, 2005). Iran's tourism industry is also owned and operated by the government. The structure of the budget and the way it is allocated is another striking feature. Abnormalities of the current structure of

the government budget and financial issues have enhanced managerial complexity that shows the necessity of reforming the budgeting system (Keshavarzian and Mofidian, 2015; Davari et al., 2012; Ehsani, 2009).

Table 5: PPS Slack Variables of Tourism Industry in Iran Provinces*

Provinces	Provincial budget	Total resorts	Total flights	Total Places**	Road Infrastructure
Khorasan Razavi	0	0	0	0	0
Qom	0	0	0	0	0
Western Azerbaijan	11613	14.78	0	0	0
East Azarbaijan	36328.92	0	2391.86	0	150.96
Kurdistan	126.54	212.68	0	0	0
Esfahan	23298.27	0	2140.75	0	139.71
Hamedan	10317.81	0	25.29	0	51.82
Yazd	6329.28	0	439.74	0	20.76
Zanjan	2995.29	0	6.58	0	165.48
Gilan	0	59.45	160.14	0	58.77
Khuzestan	4951.12	0	116.26	0	40.98
Lorestan	3475.24	0	6.56	0	4.92
Kohkiluyeh	1900.59	0	12.53	0	18.93
Markazi	1221.31	0	1.06	0	9.23
Bushehr	1540.02	0	114	0	10.55
Semnan	2137.81	0	2.2	0	3.55
Chaharmahal va Bakhtiari	242.96	0	29.37	0	1.07
Golestan	752.8	0	35.35	0	2.17
South Khorasan	771.34	0	8.25	0	0.43
North Khorasan	147.85	0	0.53	0	0.18

Note: * We considered an input-oriented DEA model that meant inputs were minimized while total number of outbound tourists (i.e., output) was kept at its current level. That led to zero slacks for output and positive slacks for those inputs used over the desired level

** A non-discretionary variable

The differences between the efficiency scores of the provinces show the possibility of a significant increase in the number of foreign tourists by better use of the existing sources. By making better use of provincial budgets, in particular, increases in the number of foreign tourists would be expected which also rationally effects on the profits of affiliated industries. Despite the significant potential for foreign tourists, Iran's current share is less than one percent, not satisfy the vision of attracting about 20 million foreign tourists by 2025, which is predicted to generate over $30 billion revenue. This is while it is an excellent opportunity to increase foreign exchange earnings and escape from the current economic downturn.

5. Conclusions and Recommendations

One of the important sources of income and the creation of job opportunities is attention to the tourism industry, known as one of the main economic pillars and one of the engines of economic growth. Considering the global growth of this industry and the existence of diverse tourist attractions in Iran, there is a potential to pay more global attention. In this regard, tourism efficiency of Iran provinces was evaluated. After collecting data, the most important factors influencing the tourism industry including government budget, number of residences, number of inbound and outbound flights, the infrastructure of roads and total places were identified and weighted in according to their importance. To evaluate the efficiency of the tourism industry in the provinces of Iran, we applied a nonparametric approach i.e., data envelopment analysis. They were ranked based on the assumption of constant returns to scale. The possibility of non-controllability of some mentioned factors was also considered.

The total number of outbound tourists in twenty major tourist provinces of Iran is less than one million in 2011, resulted in the global rank of 55th. However, the total number of global outbound tourists is estimated at about a billion people. In this ranking, countries like Turkey and Malaysia have a much better position than Iran, so that despite its considerable potential, Iran's share is much less than one percent of the world's share. The main external reasons for this unacceptable current rank should be sought in severe sanctions. In other words, the infrastructure of development tourism, the provision

of visa issuance facilities, restructuring and modernization of air transportation network, and also the transfer of money through banking networks were into trouble which clearly left out adverse effects on the number of outbound tourists.

Our conclusions are consistent with the literature results. Iran tourism industry require further improvement, and their challenges should be highlighted when it develop tourism strategies. In doing so, turism government budget should be allocated with a precise plan along with effective human resource strategy toward national and international flights to reduce the inefficiencies in the tourism industry. Iran tourism industry needs a thorough investigation into roads infrastructure to attract huge potential of the inbound and outbound turists arrivals. In overall, our results indicate that the efficiency of Iran provinces not only depends on the physical resources and on the destination characteristics, but also on the management characteristics. One policy implication of our study is that since tourism provincial budgets considerably affect on international tourist arrivals, then allocating targeted money injection should become the essential factor for Iran turism performance improvement. Regarding the 78% gap in the optimal use of resources, the number of outbound tourists can significantly be increased without using additional resources. In order to achieve the prospect of attracting about 20 million foreign tourists by 2025, in accordance with the prospectus, the inefficient use of provincial budget should be in the center of attention, as the most internal reason for provincial tourism inefficiency. Deficiencies and problems of the structure of financial issues, related to the governmental budget, have enhanced managerial complexity that indicates the needs for reforming the budgeting system in line with the policies of Article 44 of the Iran Constitution.

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