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The efficiency of Tourism in the Iran's Provinces

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Abstract
Today, tourism has become one of the great importance sections in developing economies and plays an important role in increasing their GDP. For this reason, this study takes an analytical approach to evaluate the efficiency of this industry in the provinces of the Iran and to determine sensitive indicator of tourism industry using the technique Data Envelopment Analysis (DEA) in 2012. The results suggest that, in Tehran, Esfahan, Gilan, Mazandaran, Fars, Khorasan Razavi and Khouzestan have full efficiency in tourism industry and they are considered as reference (representative) provinces for other provinces. Other provinces are below the efficient frontier. And the lowest level of efficiency in provinces is belonging to Khorasan Shomali, Ilam, Semnan, Kohgilouyeh and Chaharmahal and Bakhtiari. Further, the only sensitive index in the sector is the number of trips taken on holidays which is fully personalized variable and dependent on individual indices. In other words, distribution of efficient provinces in different geographical areas of the country can somehow be a proof that despite the efficiency of religious provinces in the current study, natural, historical and other attractions also have a significant role in encouraging tourists to travel to Iran.

Keywords**: **Tourism, Efficiency, Iran, Sensitive Index

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1-Introduction

Tourism is a main sector in many developing countries. It is one of the main sources of foreign exchange collection that could have a major contribution in the rate of employment in a tourist area. According to the surveys conducted by the World Bank, tourism is identified as a key sector in achieving economic growth and reducing poverty in developing countries (World Bank, 2006; Michel & Ashley, 2006). While factors affecting domestic demand for tourism can be easily identified in any country, determinants of foreign demand for tourism cannot be analyzed that easy and their statistics are not identifiable in different countries. This, especially in various areas interwoven with political issues, takes a more negative approach and makes the analysis more difficult to deal with. Thus, it seems that in such cases, the investigation of domestic tourism and factors affecting it could be fruitful and give a different approach towards the issue being discussed herein (Gauci et al, 2004). However, despite what we mentioned above, studies on tourism and its growth (whether domestic or foreign) are often centralized in developed countries and little attention has been focused on developing countries (Xiao & Smith, 2006; Rogerson, 2007). Iran is not an exception in this case. Thus, the present study is intended to analytically investigate the efficiency of tourism industry in Iran and its provinces in 2012, while examining the effective indicators in the area. This study is of great importance, since indicators discussed in this area can be effective in modellings associated with tourism and demand for it in Iran in future studies (Crouch, 1995). The present paper is organized as follows: Next section deals with investigating tourism in Iran. Section 3 analyzes the factors affecting tourism industry in Iran. Section 4 presents research methodology. Then we will evaluate the efficiency of Iran`s provinces in tourism industry. Finally we will conclude the paper.

2-Tourism in Iran

Iran is a country in Southwest Asia in the Middle East, which is currently known by the official name “the Islamic Republic of Iran” in the international communities. It has common land borders with Armenia, Azerbaijan, and Turkmenistan in the north, with

Afghanistan and Pakistan in the east, and with Turkey and Iraq in the west side. Also it has maritime borders with Caspian Sea in the north and with the Persian Gulf in the south. Iran`s antiquities and monuments date back to over four thousand years ago. Until 1934, Iran was known by the name "Persia "in the international relations. However, according to historical documents, evidences, oral culture and archaeological and linguistics discoveries, one may say that 4 names had been used for it earlier in the past. Iran is one of the unique countries in terms of climate diversity, such that sometimes in winter the temperature difference between the warmest and coldest parts of the country reaches over 50 c, and it is this unique factor that could change the country (Iran) into one of the major poles of tourism in the world. Tourism industry in Iran has high capacities for growth and development. According to the reports of the World Tourism Organization, Iran ranks 10^{th} in the world`s ancient and historical attractions and 5^{th} in natural attractions. In 2012, about 3834000 foreign tourists visited Iran, which is a relatively acceptable increase compared to 5 years earlier, though it is a limited number when considering various attractions all over Iran.

3-Factors Affecting on the Efficiency of Tourism Industry in Iran

In spite of the existing failures and difficulties in evaluating tourism sector in Iran (because it is a service sector), no state can ignore it. So, evaluation of this sector can help both managers and policy makers in making plans based on most appropriate indicators, and the public in accessing more effective and useful services in this field. One way to monitor the performance of any sector may be the determination of its efficiency, thus the practice of index (indices) construction is particularly important in determining the efficiency of tourism sector (tourism industry). In general, it is obvious that in defining any reality, we need some criteria and indicators by which we could convert qualitative features into a quantitative form and thus, describing the features of that reality in a certain language. By applying indicators, one can identify qualitative variables and thereby pave the way for comparative studies, evaluating and analyzing the situation. The act of index construction is a way to measure the situation, a tool for displaying the process of changes and problem

statement and an incentive for providing solutions, controlling the reality and predicting trend of affairs in the future. The above mentioned definitions also apply to the indicators of tourism sector, since only by determining indicators we could identify the activities performed in this sector and compare tourism sector in various countries or compare different indicators within a single country. In general, indicators of tourism sector in Iran (according to the census by Statistical Center of Iran, which was conducted during business days as well as holidays (very often) and covers all typical households living in urban and rural areas, can be divided by the number of households according to the situation of the trip, the number of trips according to destination and type of trip, the number of trips according to size of household, the number of trips according to the household`s place of residence, the number of trips according to the gender of the head of household, the number of trips according to literacy status of the head of household, the number of trips according to the occupational status , the number of trips according to the main objectives of tourism , the number of trips in terms of type of trips , the number of trips in terms of type of vehicle used , the number individual-night stays with respect to type of trip and the provinces visited , major target cities intended by domestic tourists in terms of type of trip , costs of household`s trips according to type of travel etc. In the present study, the above indicators (indices) are discussed with respect to their inward or outward nature as follows:
the indicators of the number of trips in separation of destination and type of trip, the number of trips in separation of size of household, the number of trips in separation of the location of the family residence, the number of the trips in separation of the gender of the family head, the number of trips in separation of the education level of the family head, the number of trips in separation of job status, the number of trips in separation of the main goals of tourism, the number of trips in separation of the means of travel, the number of trips in separation of the type of vehicle used for traveling, the number of person per night stay in trips according to the type of trip and the visited provinces, the main cities of the destination domestic trips based on the type of trip and … that in a way provide the final aim and goal of tourism which are the same as traveling are considered as output indicators and all

the indicators that in a way are effective in the number of trips, including the costs of the trips of families based on the type of trip are considered as input indicator in studies.
In our study the variable of the total number of trips performed are considered as output and the cost variables are considered as input of tourism industry in Iran. the presented input and output indicators here are the main indicators which are used for promoting tourism industry and for example it is expected that those countries that have a higher input indicators (for example, who has spent more on tourism) have a higher function in this section and as a result have higher outputs as well. However, the Efficiency rate in different counties depends on the type of substitution of inputs and outputs in the Data Envelopment Analysis Method (Coelli, 1998).

4 – Materials and methods

The present study is an applied study from aim point of view that in the uses bibliographical and analytical methods in the literature and data collection sections and in for the section of estimation uses Data Envelopment Analysis (DEA) method, which is a linear programming method and is used for the performance evaluation of the decision making units. In this method, the efficiency level of every section is calculated with the use of the available inputs and outputs information; however, the units are not compared with a pre-determined standard level (or a specified function) but the criterion are the decision making units that in similar conditions perform similar activities. This method is solved under the main models of Constant Return of Scale (CRS) and Variable Return of Scale (VRS) and follows the Input-oriented approach or output-oriented approached that in the present study Constant Return of Scale (CRS) and input-oriented approach are used. in this method, Compensatory features of DEA models are among the main features and lead to this that the decision making unit compensate the shortcoming of its outs with the help of other outputs and in some inputs save in other inputs.
Among the advantages of DEA method in short we can mention the following advantages:
A) This method has the ability to settle easily multiple outputs and inputs;

B) Only knowing the values of inputs and outputs are enough and there is no need to have price information, in other words, inputs and outputs can be entered with different measurement units (it is appropriate for efficiency calculation in human services section that determining price is difficult)
C) Analysis and evaluation of this method is more realistic comparing to other methods.
D) This method is able to determine potential sources of lack of efficiency and efficiency levels and can divide economic efficiency into two parts of technical and allocative efficiencies and on the other hand can divide technical efficiency into scale and special (managerial) efficiencies.
E) This method can specify the reference units and the inefficiency agencies can find some models for improvement and efficiency.
F) DEA is a useful tool for modeling and changing executive programs and its ability for considering the difference in operational conditions which is out of the management control also enhances this feature.
Therefore, it seems that the present method in obtaining the efficiency of health sector is one of the best possible methods (Mehregan, 2005).

5- Findings

In the present research for a more comprehensive study of efficiency in tourism industry in Iran we have tried to only use local data which are more exact and have a more comprehensive approach. For this purpose, first in summary the used indicators will be analyzed and then with studying the provinces of Iran in the year 2012, the efficient provinces are presented and the reason of their efficiency is analyzed based on sensitive indicators;
The used model in the study has been tested with an emphasis on efficiency with Constant Return of Scale and input-oriented state.
Table 3, specifies all the items related to the efficiency of the country's provinces in terms of tourist entrance. In this table the second column is the calculation of input-oriented efficiency with Constant Return of Scale. In the 3rd column, the reference provinces have been introduced for modeling by inefficient provinces, for example for inefficient Chaharmahal and Bakhtiari province, efficient

provinces of Esfahan and Khuzestan provinces have been introduced as reference. In the 4th column also the sensitivity analysis of the input and output indicators of tourism industry of the provinces under study have been calculated separately and entered.

5-1- Analytical study of provinces in terms of their tourism status (Census of Statistics Center of Iran)

Based on census of the statistics Center of Iran, the total number of trips made in spring is equal to 54,534,102 and the total numbers of trips made in summer is equal to 50,151,960 that from these numbers the highest numbers of trips in summer are related to the cities of Mashhad, Tehran, Qom , Shiraz, Isfahan, Hamadan, Kermanshah, Babolsar, Ardebil, Rasht, Orumia, Tabriz, Ahwaz, Bandar-e Anzali, Ramsar, Karaj, Lahijan, Chalus, Sar-e ayn, Nowshahr and in Spring the highest number of trips respectively are related to the cities of Tehran, Mashhad, Isfahan, Rasht, Qom, Shiraz, Chalus, Sari, Qazvin, Hamadan, Kerman, Bandar-e Anzali, Arak, Ahwaz, Lahijan, Gorgan, Amol, Karaj, Bandar-e Abbas and Tabriz.

With comparing the order of the cities in trip destinations considering the difference in the weather condition in spring and summer in all the locations of Iran clearly it is seen that religious cities of Mashhad, Qom and Shiraz in any case are considered to be among the cities with the highest number of tourists in Iran that this clearly shows that religious tourism in Iran is in a very good condition.

This statistics in another type according to the goals of trip has a well been shown in table 1.

Table 1 – The number of local trips according to the type of trip in separation of the main goals of tourism

Main goal of trip	Spring	Summer
Total	54797940	50237243
Travel and leisure	19950591	13612714
Visiting friends and relatives	20584132	19907080
Pilgrimage	7607742	9000104
Treatment	3939420	1757773
Shopping	1147998	175773
education	84620	161793
Business	653054	598865
Other goals	830383	1000094

Source: Statistics center of Iran

Based on the available statistics it is clearly seen that the most trips made in Iran are respectively related to the purposes of visiting

relatives and friends, travel and leisure, pilgrimage, treatment, education and business.

Among the most effective factors in trips we can mention the costs related to trips which include the costs of tours and excursions, costs of transportations, cost of accommodation, food and tobacco costs, costs of buying souvenirs, costs of buying supplies and commodities and etc., that are as per the following separately:

Table 2 – cost of local trips of households according to the type of trip in separation of the main cost items (million Rails)

Cost item	Spring	Summer
Tours costs	969996	992184
Transportation costs	6984832	7061389
Accommodation costs	2371452	2261270
Food costs	6302994	5956897
Cultural costs	421431	399084
Medical costs	3952590	3324937
Souvenirs costs	3553588	3725094
Purchase cost of supplies and commodities	3755139	4824263
Other costs and expenses	426653	438335
total	28738674	2898353

Source: Statistics center of Iran

Statistics in table 2 clearly show that Food and tobacco costs and transportations costs consists the highest costs in local trips in Iran.

5-2- Model estimation

This article has dealt with evaluating the efficiency of tourism industry of Iran in the year of 2012. The reason of using the statistics of this year is that the data related to the holidays of this year (spring and summer) which has been obtained from Census of Statistics Center of Iran are complete.

The method used in this article is Data Envelopment Analysis method and the software used in this study is Windeap. The used outputs in this research are the total trips made to provinces of Iran and the inputs include the made costs that are transportation, accommodation, food and tobacco, Commodities and Supplies purchase costs.

The results related to the evaluation of provinces' efficiency in tourism industry are as per the following table:

Table 3 – studying the efficiency of tourism industry in Iran's provinces Based on input-output model with Constant Return of Scale in 2012

Provinces	efficiency	Reference province	Sensitivity analysis				
			Number of trips (output)	Transportation costs (input)	Food costs (input)	Accommodation costs (input)	Commodities purchase costs (input)
East Azerbaijan	85	4-8	-	85	85	85	85
West Azerbaijan	67	4-8	-	67	67	67	67
Ardebil	70	4	-	70	70	70	70
Isfahan	100	efficient	-	100	100	100	100
Alborz	87	Efficient	-	87	87	87	87
Ilam	43	13	-	43	43	43	43
Boushehr	70	25-27	-	70	70	70	70
Tehran	100	Efficient	-	100	100	100	100
Chaharmahal and Bakhtiari	52	4-13	-	52	52	52	52
Khorasan Jonoubi	61	11	-	61	61	61	61
Khorasan Razavi	100	efficient	-	100	100	100	100
Khorasan Shomali	40	11	-	40	40	40	40
Khouzestan	100	Efficient	-	100	100	100	100
Zanjan	57	11-17	-	57	57	57	57
Semnan	49	11	-	49	49	49	49
Sistan and Baluchestan	50	11-17	-	50	50	50	50
Fars	100	Efficient	-	100	100	100	100
Qazvin	89	4	-	89	89	89	89
Qom	92	11	-	92	92	92	92
Kurdestan	65	17	-	65	65	65	65
Kerman	89	4-17	-	89	89	89	89
Kermanshah	64	17	-	64	64	64	64
Kohgiluyeh	50	13-17	-	50	50	50	50
Golestan	89	25	-	89	89	89	89
Gilan	100	efficient	-	100	100	100	100
Lorestan	70	13	-	70	70	70	70
Mazandaran	100	Efficient	-	100	100	100	100
Markazi	88	8	-	88	88	88	88
Hormozgan	94	27	-	94	94	94	94
Hamadan	85	4	-	85	85	85	85
Yazd	65	4-17	-	65	65	65	65

Source: Research findings

6- Discussion and conclusion

Considering the results obtained from the table it is clear that Tehran, Isfahan, Gilan, Mazandaran, Fars, Mashhad and Khuzestan provinces have full efficiency and other provinces of the country are below the efficient level. Among these provinces, the lowest level of efficiency respectively belongs to North Khorasan, Ilam, Semnan, Gohkilouyeh

and Chaharmahal and Bakhtiari provinces. Of course, we should note that since on a average the conditions of all the provinces are similar the determining variable here is the number of travelers (the people who visit the province). On this basis, the results relating to provinces' efficiency in tourism industry in a way is predictable.

Comparing the related statistics (table 3) and the efficiency between efficient provinces and the most inefficient provinces show that:

A) North Khorasan, Ilam, Semnan, Gohkilouyeh and Chaharmahal and Bakhtiari provinces that have the lowest level of efficiency have the lowest number of visitors and based on this factors low efficiency in these provinces is predictable;

B) efficiency of provinces such as Tehran, Mashhad, Isfahan, Gilan and Mazandaran in tourism industry in spite of high number of tourists in these provinces is tangible; however, comparing the statistics related to efficiency of other provinces doesn't show the place of these provinces among other efficient provinces accurately (this factor is resulted from the substitution feature of the DEA method).

Based on the result of the presented estimation in table (3), efficient provinces have been introduced as reference province (representative) for inefficient provinces; in other words, it can be said that inefficient provinces with placing efficient provinces as their reference can increase their efficiency. For example, reference provinces for Yazd province are Isfahan and Fars provinces that considering with the population and cultural conditions these provinces can be presented as a proper model for tourism of Yazd. Determining sensitive indicators in tourism industry and studying the quantity and quality rate of Iran's provinces are among other issues presented in table (3) that with elimination of each indicator and re-determination of the efficiency can be achieved. The results related to sensitivity analysis have been presented in table 3 that indicate that only the output indicator (the number of trips made) is the sensitive indicator here and other indicators don't create that much of sensitivity (due to similar condition) that here it should be note that since the costs related to transportation, food, purchase, accommodation and … in all provinces are almost the same, the main reason for the efficiency of the efficient provinces and even change of efficiency of other

provinces after elimination of the indicator of the number of trips, this indicator itself, that is the number of the made trips to different provinces, is completely subjective. Of course, placement of efficient provinces (Khorasan Razavi, Tehran, Mazandaran, Isfahan, Gilan, Fars and Khouzestan) in different geographical regions of the country (north, north east, south west, center and etc.) can in a way be a witness to this claim that in spite of the high efficiency of religious provinces (Khorasan Razavi and Fars) in this research, when it comes to tourism in Iran, natural, historical, physical and … attractions also are so much important in trips.

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