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The Effect of Economic, Social and Natural Factors on the Efficiency of Iran's Tourism Industry

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ABSTRACT

Nowadays, Tourism plays an important role in the development of many countries including developing countries**,** such as Iran which has a high capability in this sector. This study examines the economic (GDP per capita and Inflation), social (security and population), and natural factors (total hours of sunshine, total rainfall, natural attractions) on the efficiency of Iran's tourism industry. The data research included statistics and information of 31 provinces of Iran during the years of 2011 to 2017 and the analysis technique of fuzzy data envelopment was utilized to calculate the efficiency of the tourism industry and also, the stochastic Tobit panel model was applied to investigate the economic, social and natural factors. The results of fuzzy efficiency in this study illustrated that during 7 years, only four provinces - Ardabil, Tehran, Kohkiluyeh, Boyer-Ahmad, and Gilan- were efficient each year. Moreover, the results showed that during the period study, among the factors affecting performance, the variables of natural attractions, total rainfall, GDP per capita, inflation, and security have affected the efficiency of Iran's tourism industry. Among these variables, the natural attraction variable had a higher marginal effect than the other variables. Therefore, according to the results, it is suggested that more efforts be made to identify and rehabilitate natural resources and provide more facilities to preserve pristine tourist areas.

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1. Introduction

Tourism as a service industry has expanded significantly in recent years. The development of this industry, not only benefits numerous businesses, such as hotels and resorts, travel agencies and restaurants, but also attracts foreign money and currency (Chaisumpunsakul and Pholphirul, 2018**).** After the end of World War II (1950), the tourism industry underwent a dramatic transformation with the expansion of urbanization, the reduction of working hours, the increasing development of roads and transportation networks, the promotion of public culture, and the reform of laws and regulations (Rafiei Darani and Asghari, 2018). So that today tourism has become a phenomenon and one of the symbols of the age of civilization. Due to the unique features of tourism, this industry is known by scientists and experts for hidden exports and smokeless industry. In recent years, it has been ranked third in the world's major economic fields after oil and automobile manufacturing and it has gained a prominent position in different countries and regions of the world and has had a positive effect on increasing income, job opportunities, foreign trade balance, and culture. Also, this important economic sector has an undeniable impact on investment in various infrastructure areas of the country (Fatima and Elbanna, 2020). The tourism sector with 3.9%, after factory production, has the largest share in the growth of world GDP. Today, many developing countries are trying to increase their participation in the global economy through the development of international tourism (WTTC, 2019). Figure 1 shows the growth of GDP in the world based on different economic sectors in 2018.

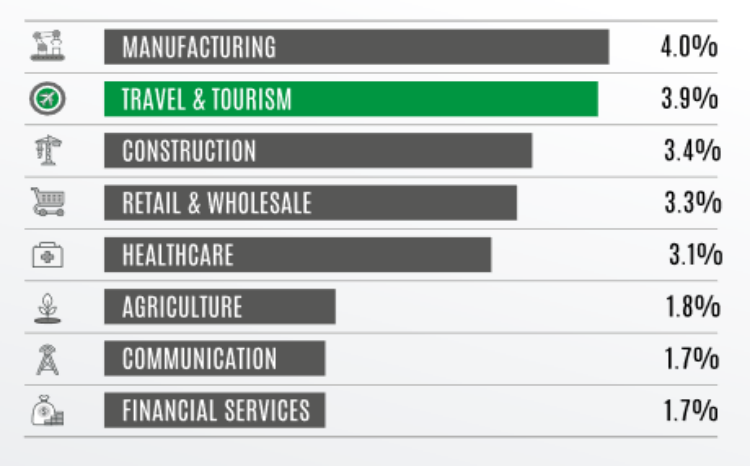

Figure 1. GDP Growth in the World Based on Different Economic Sectors (%) – 2018
Source: WTTC, 2019.

One of the most commonly cited models in most studies related to various tourist attractions is the model proposed by the World Tourism Organization, in which tourist attractions are divided into three categories: cultural-historical, natural, and man-made. Tourism of natural resources is interdependent constitutes many tourist attractions. Among these divisions, the natural attractions at the destination are often the first thing that catches the tourists' attention, which includes a diverse combination of natural resources. Tourism is a climate-dependent industry, and climate change can lead to a decrease or increase in tourists' travel (Becken and Wilson, 2013). According to Freitas (2003), the climate has three aspects: aesthetics, physical and thermal aspects, which are all interrelated. The aesthetic aspects of a tourist destination that largely determine the attractiveness of a place for tourists are mainly influenced by elements such as sunlight, cloudiness, and air quality in the place (Goh, 2012).

Tourism researchers have studied the effects of climate on the tourism industry including geographical space, supply and demand, and market factors of the tourism system (Martin, 2005). They believe that climate and its changes are the main criteria for assessing the

appropriateness of tourism activities and ultimately determining the choice of destination (Amelung et al., 2007; Becken, 2013; Goh, 2012; Rossell oeNadal, 2014). Climate change can also lead to changes in tourism demand; for example, Goh (2012) went beyond the conventional tourism demand framework through non-economic factors (e.g., social and climatic variables). His findings confirm the proposed importance of climate change in influencing Hong Kong's tourism demand. Therefore, climatic variables, as a factor of pressure and tension, will be effective in shaping patterns of tourism destinations (Wang et al., 2018). People have always traveled from place to place, and travel has often been difficult from time immemorial, regardless of period or means of transportation. However, the issue of safety and security is important nowadays, not only for the whole society but also for tourists, because safety is a basic need in all areas of human activity, including tourism (Popescu, 2011). However, over the past decades, the link between tourism and crime has been recognized (Tarlow, 2009), but the terrorist attacks of September 11, 2001, in the United States changed the perception of this issue and therefore, tourism researchers are more concerned with analyzing the relationship between tourism, on the one hand, and tourism security, on the other. (Tarlow, 2006; Laws and Prideaux, 2005; Wilks and Page, 2003; Henderson, 2007; Talow, 2009). Security in the tourism industry is known as one of the forces resulting from the change in this sector in the new millennium (Breda and Costa, 2006; Freyer and Schroder, 2007; Edgell et al., 2008; Tarlow, 2009) and in the meantime, crime, terrorism, food safety, health issues, and natural disasters are the main areas of concern (Breda and Costa, 2006; Popescu, 2011). Given the importance of tourism in the world, many studies have been conducted around the world; for example, studies by Cracolici et al. (2008), Bi et al. (2011), Luo et al. (2014), Kurt (2017) and Chen (2018) noted that in all these studies, data envelopment analysis method has been used to estimate the

tourism efficiency industry. For instance, Kurt (2017) measures the relative performance of 29 European countries with the data of the year 2013 using data envelopment analysis. this study has used three input and three output variables to evaluate the relative performance of countries which includes tourism costs, the number of staff and beds as input variables, and tourist receipts, tourist input, and the number of nights spent as output variables. This research results showed that 16 countries are relatively efficient and 13 of them are relatively inefficient. The role of climate in the tourism industry can also be studied, which Ridderstaat et al. (2014) found that climate change in the United States is an important factor in motivating American tourists to the Philippines; this is because the influx of US tourists to the Philippines increases significantly as the United States experiences cold weather. Chaabouni's study (2019), the only similar study to this research, are examined the efficiency of tourism and its determinants using panel data for 31 provinces of China during the period between 2008 and 2013This research used SUPER DEA to evaluate the performance, and a random Tobit panel model for the factors affecting the performance. The results show that the efficiency of tourism in China in the study period is low. Their results also showed that trade openness, climate change and intense market competition increase tourism efficiency.

As seen in various studies, one of the appropriate and widely used methods to study the tourism industry is the data envelopment analysis.

However, since uncertainty is not considered in the data envelopment analysis method, in this research, fuzzy data envelopment analysis has been used, because today, the use of fuzzy technique is one of the ways to apply uncertainty in models. Also, in this research, for further analysis on tourism efficiency, the factors affecting efficiency have been investigated using Tobit regression. In fact, the use of fuzzy data envelopment analysis method and the study

of factors affecting performance using Tobit regression has been one of the innovations of the present study.

Therefore, the general purposes of this research are investigating the effects of these factors on the efficiency of Iran's tourism industry:

- variables of natural attractions
- climatic variables of temperature and precipitation
- population variables
- GDP per capita
- Inflation
- security variable

2. Research Methodology

Different methods for measuring performance are mainly divided into two categories: parametric and non-parametric. Parametric ones refer to methods that t a specific form for the production function is first considered and then with one of the methods of estimating this function, common in statistics and econometrics, unknown parameters of this function will be estimated. The most important ones of theses methodsare the production function of the random border and the profit function (Wu et al., 2011; Chen, 2018). Nonparametric methods are another possible method for evaluating performance in which firms are evaluated using mathematical programming techniques. In this method, there is no need to estimate the production function, and if the firm has several different outputs, this method will not have a problem in evaluating efficiency. In the "comprehensive data analysis" method, a distinction is made between technical and scale efficiencies. Comprehensive data analysis is based on optimization using linear programming. In this method, the efficient boundary curve is created from a series of points determined by linear programming, through two assumptions of fixed and variable returns to scale can be used (Shuai and Wu, 2011; Chiu, 2018).

As mentioned, one of the disadvantages of data envelopment analysis method is not considering the uncertainty in the model and also one of the most important points in performing performance analysis is the need to accurately measure the input and output values (Honma and Hu, 2012; De Jorge and Suarez, 2014; Chen, 2018). Fuzzy data envelopment analysis (FDEA) was recommended for cases where we are not sure about the accuracy of the input or output values. Therefore, the efficiency scores of the units can be obtained accurately in fuzzy cases (Oruç and Güngör, 2010; Ozkoc et al, 2013; Oliveira et al., 2015; Chiu, 2018).

A fuzzy set Ã in the world space M is defined by a function μ Ã (x) that takes values in the range [1, 0]. If X is a reference set, then the fuzzy set Ã in X is a set of ordered pairs, represented by Equation (1):

$$\tilde{A} = \{(x.\mu_{\tilde{A}}(x))|x \in X\} \quad (1)$$

In equation (1), μ_Ã (x) is a function of membership or degree of membership x to Ã which is a function of X to [1, 0]. The proximity of the value of μ_Ã (x) to the number one indicates that x belongs more to the set. In the case that x is completely we have: μ_Ã (x) = 1 (Ozkoc et al., 2013).

In general, various methods are used for fuzzy construction such as triangular fuzzy, trapezoidal fuzzy, single fuzzy, and Gaussian fuzzy (Djam and Kimbi, 2011). However, since the use of fuzzy information in decision making, computing, and modeling is different from implementing fuzzy results in the real world, it is necessary to apply a series of operators, the fuzzy result to become a definite result, which is called D-fuzzy. There are different strategies for diffusion such as alpha shear, the center of gravity, maximum mean method, area bisector, smallest maximum and largest maximum (Ross, 2005; Asmuni, 2008).[1] As mentioned, data envelopment analysis is a

1. In the present study, considering that the output (number of tourists) is fuzzy in nature, the basic DEA model, CCR model and, output axes have been used. And given that there is no evidence that the greater or lesser number of tourists is uncertain, according to expert

mathematical programming model for evaluating the performance of decision-making units (DMUs) that have multiple inputs and outputs. According to domestic and foreign studies on the efficiency of the tourism industry, entries in this industry are usually various variables such as spending or investing in the tourism sector, the number of people working in the tourism sector, the number of hotels and the number of tourist attractions and for the outputs, variables such as the number of tourists, value added or income from tourism are used.

According to the information available in Iran , three inputs and two outputs will be used in this research. Inputs include the provincial budget of the Cultural Heritage and Tourism Organization, the number of tourist attractions (meaning tourist attractions, the number of natural, historical and cultural monuments registered in each province nationally and internationally), and the number of hotels (Li et al., 2014); and outputs also include the number of domestic and foreign tourists (Lao et al., 2014; Li et al., 2014; Chaabounie, 2019). The two outputs of the number of domestic and foreign tourists have been used together to examine the efficiency of the entire tourism industry of the country according to the common facilities for both groups of tourists at the same time. After calculating the efficiency of the tourism industry, the second purpose of this study is to identify the factors affecting this efficiency. Since the efficiency value of the units is in a certain range (0 to 1), the affecting factors can be determined using Tobit regression in which the dependent variable amplitude is censored in some cases. This model is used for data that has a discrete and continuous part. Data censorship is a data constraint that occurs on data collected from levels below or above the threshold, or both. The general pattern of Tobit is to identify the factors affecting performance in equation (2) (Simar and Wison, 2000; Chaabouni, 2019).

diagnosis, triangular fuzzy numbers have been used. Also, for de-fuzzing in this research, the α -cutting methodwas used.

$$y_i^* = \acute{\beta} x_i + u_i$$

$$y_i = \begin{cases} y_i^* & if\ 0 < y_i^* < 1 \\ 0 & if\ y_i^* < 0 \\ 1 & if\ y_i^* > 1 \end{cases} \quad (2)$$

In equation (2), β is the vector of the met parameters and x is the vector k. Therefore, the general form of the Tobit regression function is in the form of equation (3).

$$\bar{\theta}_j = \alpha_o + \alpha_j \sum_{j=1}^{k} X_{ij} + \varepsilon_i \quad (3)$$

In equation (3), $\bar{\theta}_j$ efficiency (efficiency calculated by fuzzy data envelopment analysis method), X explanatory variables include natural factors (including the index of natural attractions, precipitation, and temperature), social (population and security index), economic (GDP per capita and Inflation), accommodation, tourist attractions and Dummy variables1 for international airports of provinces (provinces that have international airports one and otherwise zero). α_j is Vector of unknown parameters and ε_i is a waste statement that this component has a normal distribution with zero mean and variance σ_v^2 and the equation $\varepsilon_j \geq 1 - \alpha - Z_{ij}\delta$ is established for it (Simar and Wison, 2007; Chaabouni, 2019). It is necessary to explain that all the statistics and information required in this research have been collected from the website of the Statistics Center and the Cultural Heritage and Tourism Organization and GAMS 25, STATA 15 and EXCEL software have been used to estimate the model.

3. Results

The statistical characteristics of the variables used are shown in Table 1, which summarizes the minimum, maximum, mean, and standard deviation of the input and output of the study.

1. Provinces with international airports: Tehran, East Azerbaijan, Fars, Khorasan Razavi, Hormozgan, Sistan and Baluchestan, Khuzestan, and Yazd (Source: Ministry of Roads and Urban Development).

Table 1. Statistical Characteristics of the Study Variables

Variable name	Variable description	Minimum	Maximum	Average	Standard deviation
Tourism budget	The total construction budgets and expenses of the Cultural Heritage and Tourism Organization (million Rials)	14840	3334872	88709.38	227318.4
Accommodation	The total number of 5, 4-, 3-, 2- and 1-star hotels and guesthouses, apartment hotels, accommodation complexes, and hospitals	3	985	120.6	182.76
Tourist attractions	The total number of national and international registered natural, historical and cultural attractions	2	192	47.91	33.12
Domestic tourists	The number of local tourists entering the province (people)	189283	20696984	4292881	4049870
Foreign tourists	The number of foreign tourists entering the province (people)	63	2104000	109744	226777
Security indicator	The number of thefts from government facilities and number of premeditated murders in the provinces	19	1345	235.34	245.35
Temperature	The total hours of sunshine in the provinces (Celsius)	1665.7	3912.7	3009.54	396.68
Rainfall	The total annual rainfall of the provinces (mm)	22	1637	303.533	261.188
Natural attractions	The total area of a national park, wildlife sanctuary, protected area, and registered national natural monuments (hectares)	25344	2467439	525582	600331
GDP per capita	The total value of production of goods and services in a province at the market	30051.7	778970.5	146757.9	123660

Variable name	Variable description	Minimum	Maximum	Average	Standard deviation
	price during one year (million Rials)				
Population	To a group of people of the same species who live in the same place and time (thousands of people)	557	13461	2514.87	2352.05
Inflation	The formula is: $\frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} * 100$, (CPI: The consumer price index)	14.7	56.02	15.13	12.77

Source: Research finding.

The figures in Table (1) show that the highest number of domestic tourists during the years 2011 to 2017 among 31 provinces of the country was related to Gilan province in 2012 and the lowest number was related to North Khorasan province in 2011. The highest and lowest number of foreign tourists during these years among the provinces was related to Qom province in 2017 and North Khorasan province in 2014. The highest number of accommodation places during these years belonged to Khorasan Razavi province in 2012 and the lowest number belonged to Kohkiluyeh and Boyer-Ahmad provinces in 2011. The highest number of registered tourist attractions, which included natural, historical, and cultural attractions during the study years, was related to Yazd province and the lowest was related to Kohkiluyeh and Boyer-Ahmad provinces. Also, the total construction budgets and expenses related to the cultural heritage and tourism of the provinces during the 7 years of study were related to Ardebil province in 2014 and the lowest belongs to Qom province in 2011. Most thefts committed and premeditated murders during the years under review were related to Tehran province in 2014 and the least thefts committed and premeditated murders were related to Ilam province in 2011. The highest total number of sunny hours was related to Isfahan province in 2012 and the lowest total number of sunny hours was related to Gilan province in 2011. In the same year, this

province had the highest total rainfall during 7years. The lowest rainfall was in Yazd province in 2011. The highest and lowest populations of the provinces are related to the provinces of Tehran in 2017 and Ilam in 2014, respectively. The most GDP per capita during the years under review were related to Bushehr province in 2017 and the least GDP per capita were related to Sistan and Baluchestan province in 2011.

After analyzing the data used in the research, the results of fuzzy data envelopment analysis with tourism budget inputs of each province, number of accommodations, tourist attractions, and number of domestic and foreign tourists are shown in Table (2).

Table 2. Results of Fuzzy Data Envelopment Analysis for 31 Provinces during the Years 2011 to 2017

Year / Provinces	2011	2012	2013	2014	2015	2016	2017	Mean
East Azarbaijan	1	1	1	1	1	0.93	0.50	0.92
West Azerbaijan	1	0.43	0.58	0.77	0.49	0.40	0.77	0.64
Ardabil	1	1	1	1	1	1	1	1
Esfahan	0.70	0.66	0.83	0.59	0.69	0.87	0.63	0.72
Alborz	0.68	0.81	0.44	0.38	0.57	0.69	0.71	0.61
Ilam	0.61	0.14	1	0.92	0.79	0.78	1	0.75
Bushehr	0.45	0.52	.34	.57	.48	0.46	0.50	0.47
Tehran	1	1	1	1	1	1	1	1
Chaharmahal va Bakhtiari	0.62	0.56	0.5	0.75	0.68	0.67	0.53	0.61
South Khorasan	0.48	0.66	0.57	0.36	0.54	0.33	0.37	0.47
Khorasan Razavi	0.77	0.78	0.95	0.54	0.61	0.62	0.67	0.7
North Khorasan	0.07	0.12	0.76	0.54	0.40	0.82	0.77	0.50
Khuzestan	0.74	0.60	0.47	0.48	0.58	0.94	0.83	0.66
Zanjan	0.36	0.38	0.41	0.37	0.41	0.49	0.48	0.42
Semnan	0.40	0.37	0.25	0.24	0.29	0.32	0.29	0.31
Sistan and Baluchestan	0.28	0.44	0.53	1	0.74	1	0.67	0.66
Fars	0.65	0.43	0.44	0.71	0.61	0.68	0.67	0.60
Gazvin	0.21	0.68	0.75	1	0.78	0.94	0.94	0.76
Qom	1	1	1	1	1	0.63	1	0.95
Kordestan	1	0.38	0.59	0.61	0.65	0.72	0.56	0.64
Kerman	0.38	0.5	0.69	0.79	0.44	0.42	0.40	0.52
Kermanshah	0.50	0.41	0.61	0.38	0.48	1	0.91	0.61
Kohkiluyeh and BoyerAhmad	1	1	1	1	1	1	1	1
Golestan	0.75	0.67	0.83	0.70	0.69	0.95	0.91	0.78

Year / Provinces	2011	2012	2013	2014	2015	2016	2017	Mean
Gilan	1	1	1	1	1	1	1	1
Lorestan	0.38	0.64	0.93	0.47	0.60	0.91	0.83	0.68
Mazandaran	0.85	0.79	0.92	0.72	0.57	0.50	0.77	0.73
Markazi	1	1	1	0.88	1	1	1	0.98
Hormozgan	0.70	0.78	1	1	1	1	1	0.93
Hamedan	0.73	0.76	0.78	0.82	0.95	0.83	0.83	0.81
Yazd	0.33	0.22	0.14	0.41	0.31	0.47	0.28	0.31
Average	0.67	0.64	0.72	0.71	0.69	0.75	0.74	

Source: Research finding.

According to Table (2), the provinces of Ardabil, Kohkiluyeh and Boyer-Ahmad, Tehran, and Gilan during the years 2011 to 2017 had an efficiency of one means that these provinces have been efficient during these 7 years. Also, the lowest efficiency was related to North Khorasan province in 2011 with an efficiency of 0.07. Also, the lowest average efficiency belongs to Semnan and Yazd provinces, with an efficiency of 0.31, which had the lowest efficiency among the average efficiency of the provinces during 7 years. But the main purpose of this study is to investigate the factors affecting the efficiency of Iran's tourism industry based on model (3). Since the model is based on composite data, before estimating the Tobit model, tests related to money or panel data and fixed or random effects tests are given in Table (3).

Table 3. F-Limmer and Hausmann Test Results

	Statistics of F. Limmer	Significance level	Result	Hausman test	Significance level	Result
General model	8.44	0.000***	panel	11.6	0.1	Random effects

Source: Research finding.

According to Table (3), the general model will be estimated as a panel with random effects, the output of which is reported in STATA 15 software in table 4 after estimation.

Table 4. Results from Tobit Model

Variable	Coefficient value	Standard deviation	Statistics z	Probability value	Marginal Effect
GDP	0.0000032**	0.00000013	2.51	0.012	0.00000008

Variable	Coefficient value	Standard deviation	Statistics z	Probability value	Marginal Effect
P	0.217	0.14	1.53	0.12	0.0066
Rain	0.0002***	0.00007	2.79	0.005	0.000065
Temp	-0.00005	0.000047	-1.14	0.25	-0.000016
Security	-0.28*	0.159	-1.78	0.07	-0.0086
Nature	0.37***	0.137	2.72	0.007	0.011
Inflation	-0.0002*	0.0001	-1.78	0.07	0.000075
Accommodation	-0.0018	0.001	-1.4	0.14	-0.000057
Tourist Attractions	0.0017	0.0018	0.98	0.32	0.000054
Dummy	0.14**	0.058	2.42	0.01	0.0042
C	0.69***	0.158	4.37	0.00	-
Log likelihood	121.286***				

Source: Research finding.

Note: Values in parenthesis are the estimated t-statistic. *. **. and *** indicate significance at the 10%, 5%, and 1% levels.

According to Table 4, among the variables of GDP per capita, population, total precipitation, total hours of sunshine, security index, natural attraction index, Inflation, Accommodation, Tourist Attractions and Dummy, the variables of GDP per capita, precipitation, natural attractions, inflation, security and Dummy variable are significant and other variables did not have a significant effect on the efficiency of Iran's tourism industry during the study period. The four variables of GDP per capita, rainfall, natural attractions and Dummy (as expected) were in the same direction with efficiency, which means that an increase (decrease) in the variables of population, rainfall and natural attractions leads to an increase (decrease) in the efficiency of the tourism industry. The two variables of security and inflation have inverse relationship which means that an increase (decrease) in the variables of population, rainfall and natural attractions leads to a decrease (increase) in the efficiency of the tourism industry

The last column of Table 4 shows the marginal effect of the variables, One unit increase in GDP per capita will increase the efficiency of the tourism industry by 0.00000008 unit. Also, one unit increase in rainfall leads to an increase of 0.000065 unit in the efficiency of the tourism industry and one unit increase in natural attractions increases the efficiency of the country's tourism industry by 0.011 unit. Also, a one unit increase in the security and inflation variables leads to a decrease of 0.0086 and 0.000075 unit in the efficiency of the tourism industry.

4. Conclusion

Positive impacts of tourism industry on increasing incomes, job opportunities, foreign trade balance as well as its cultural influences lead to the development of this industry in communities whichhas achieved a prominent position in various countries and regions of the world. This study investigates the importance of tourism industry in Iran, which has considerable potentials in this sector; and also, the natural, social and economic factors on the efficiency of Iran's tourism industry. So far, first, efficiency was performed by the analysis method of fuzzy data envelopment from 2011 to 2017, and then the factors affecting performance were investigated by the Tobit panel method. The results of fuzzy efficiency in this study illustrated that during 7 years ; only four provinces of Ardabil, Tehran, Kohkiluyeh and Boyer-Ahmad, and Gilan have had the efficiency each year. Also, the lowest average efficiency belongs to Semnan and Yazd provinces (0.31) during these 7 years.

According to the obtained results, poorly performing provinces had fewer budgets and fewer accommodations. To increase the efficiency of these provinces, according to their climatic and regional characteristics, it is recommended to require appropriate and extensive publicity to introduce these areas and their tourism attractions to encourage traveling to these areas. It is also suggested to the provinces

with low and medium performance in tourism industry to change their position by following the plans and approaches of high-performance provinces.

As stated, the main purpose of this study was to investigate climatic, social and economic factors on the efficiency of Iran's tourism industry. According to the results estimated by the stochastic Tobit panel method, among natural factors, precipitation variables and natural attractions have had a positive effect on the efficiency of the tourism industry. Additionaly, the direct relationship between precipitation variable has a positive effect on the country's natural resources, which ultimately leads to increased efficiency of the tourism industry. The rainfall increases the greenery of natural resources, as one of the main factors of tourism industry; therefore, it will ultimately lead to an increase in tourism efficiency. Also, due to the high marginal effect of natural attraction, which indicates the importance of this variable among others, more efforts should be made to identify, preserve and rehabilitate natural resources and provide more facilities to preserve pristine tourist areas. Besides, the variable per capita GDP and the Dummy variable related to the provinces with international airports had a significant effect on efficiency, both of which had a direct relationship with efficiency. This means that the increase in GDP per capita and the number of international airports in the province will increase the efficiency of the tourism industry and additionally, providing the necessary infrastructure to increase the country's international airports. Another result of this study was the negative relationship between the economic variable of inflation and the social variable of security, which means that as the general level of prices and the number of crimes in provinces increase, the efficiency of tourism will decrease and since the increase in inflation, regarding its inverse relationship with traveling, can also indirectly be a motivating factor for crime, so

it is recommended that officials pay special attention to this factor and suitable management will reduce the increase in price levels.

Therefore, according to the results of the first and second parts of this study, the following items are generally proposed:

- Preservation and restoration of natural resources and introduction of unknown and lesser-known natural attractions of tourism through mass media and extensive publicity at the national and international levels
- Creating a sense of security and tranquility for tourists both at the origin and at the destination
- Providing the necessary facilities such as fast and safe transportation services, airport transportation, acceptable airport facilities, and facilities for having a comfortable and quiet stay for tourists, especially foreign tourists
- Modernization of equipment and supplies used in this industry, including the creation of banking services and facilities for foreign tourists
- Defining and providing new services following its demand, and improving the quality of services, are effective factors in improving efficiency.
- Increase incentives to rise the provinces' population for strengthening the tourism industry and creating more demand

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