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Classification of Cities of Isfahan Province on the Basis of Indicators of Electronic Tourism

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Abstract

Nowadays, electronic-tourism is considered as one of the biggest economic sectors in most countries. Our country also must take some steps to develop it.

One of the basic actions of electronic tourism development is classification of electronic-tourism infrastructure in different zones of a province and a balanced distribution of infrastructures and adjusted inequality in different regions.

The study area is the vast province of Isfahan in central Iran, including 23 of the cities and is the leading province in the field of information technology.

In addition to the study of electronic-tourism and information technology and its spatial distribution among the different cities of the Isfahan province, this study is used to classify and level these cities based on the electronic-tourism indicators including infrastructures of information technology using TOPSIS model So, realizing the infrastructures and classification them within the mentioned regions helps to have a better management on tourists and develop electronic tourism.

The research method adopted here is descriptive - analytical and survey. TOPSIS model and SPSS software were used for analyzing the data. Preliminary results indicate that referring the considered criteria for leveling the cities ,some cities such as Isfahan, Shahin Shahr and Khomeini Shahr, are in first to third grade, respectively in electronic –tourism indicators. Fereidoonshahr and Semirom also have been graded as last ones.

Keywords: Classification, E-tourism, Information technology, TOPSIS, Isfahan

1. Introduction

1.1. Statement of the Problem

Tourism is nowadays regarded as one of the most important and dynamic activities in the world, so the number of foreign and domestic tourists and the income obtained through it are continuously increasing across the world. Many countries ever-increasingly know that

they should improve their economic status and try to find new ways. One of these methods that has become very important during the two recent decades and has attracted the attention of most countries is E-tourism.

Although Iran is among the five superior countries in the world due to climatic and biological diversity and is among the ten superior countries in historical and cultural terms, the statistics show low status of tourism industry in this country and its one percent share in the global tourism portfolio. Isfahan province is not exceptional too. Also, E-tourism is not so advanced in Iran at present which is due to infrastructural problems in the field of information technology, inaccessibility of many people to the internet and low number of internet users than other countries. Therefore, given to the inappropriate status of Iran as well as Isfahan province in tourism industry, it seems that development of E-tourism and the related infrastructures can compensate for the existing gap to some extent.

Another problem about tourism and especially E-tourism in Iran including Isfahan province is lack of balance in spatial organization and lack of hierarchy based on interactive relationship among tourism areas. Classification of tourism areas is a measure to determine the centrality and also the required infrastructures and modify inequality among the areas (Hekmatnia & Musavi, 2007: 207). Developing communicative and information infrastructures will add tourists' willingness towards destinations.

Isfahan province with an extent equal to 107018 square kilometers has 23 cities that have obvious differences in terms of E-tourism indexes including use of the telephone and mobile phone, internet connection speed, use of the internet, degree of optical fibers lines, use of the internet cafe and offices of communication services, etc. This province has a prominent status than other provinces in terms of geographical situation and especially accessibility given that it is located at the center of Iran. Despite various cultural, historical, religious and eco-tourism attractions, this province does not have a competent status in the world in terms of incomes obtained from tourism. The present study explores E-tourism and information technology in tourism and its spatial distribution among the cities in Isfahan province and classifies the cities based on E-tourism indexes. Thus, efficient actions can be taken to reach the desired status if the current status is recognized.

1.2. Significance of the Study

Iran's economy relies on oil incomes and oil is a fossil energy that is exhaustible. Now, oil industry cannot compete with industries of developed countries and there is no suitable possibility to replace oil in other economic sectors at least in short-term.

One of the income resources given to spatial status and factors of attracting tourists such as natural perspectives, historical monuments, climatic diversity, and etc. is tourism. Sustainable and holistic development can be achieved via a scientific and theoretical background and evaluation of positive and negative effects, planning and proper management in tourism activity.

Information technology has changed the practical methods in all organizations especially in tourism industry in recent years. The fact that 66% of internet users have tendency towards E-tourism is an evidence to deal with an issue that is the undeniable necessity of the third millennium and it requires basic behavioral changes for progress and offering better services. Today, E-tourism is one of the biggest economic sectors in many countries. What is important in E-tourism is the possibility to introduce tourism potentials of a country, city or region virtually to people and tourists across the world by means of modern tools. Virtual tourism is especially important for developing or less-developed countries that do not have good

tourism infrastructures. Therefore, the essential infrastructures should be developed to expand this type of tourism.

Isfahan province has been one of the important poles of tourism in Iran which has more than 300 historical, cultural and natural attractions and is pioneer in the field of information technology that can enjoy the economic and cultural achievements of E-tourism. E-tourism development in Isfahan province and exploiting its positive effects have not been realized yet in cities of this province because of different t reasons such as imbalance in development of information technology infrastructures. Classification of different areas of a province, balanced distribution of infrastructures, and modifying inequality in various areas are the basic actions for tourism development. The number of tourists, hence, can be increased considerably by identification of the infrastructures and classification of them in the areas to develop E-tourism via investment and proper planning.

1.3. Purposes of the Study

1. Exploring the existing infrastructures of E-tourism in cities of Isfahan province and classification of them
2. Analytical-comparative exploration of cities of Isfahan province in terms of electronic literacy and degree of believing in E-tourism
3. Offering strategies and suggestions to develop E-tourism in cities of Isfahan province

1.4. Hypotheses

1. It seems that central cities of Isfahan province have a better status in terms of E-tourism indexes.
2. It seems that cities with higher tourism and eco-tourism potential have a better status in terms of E-tourism indexes.
3. It seems that there is a positive and significant relationship between citizens' electronic literacy and E-tourism development.

1.5. Methodology

This study was carried out using descriptive-analytical method. In order to achieve the purposes of the study, the mixed method (survey and descriptive-analytical) was first used. The required information and statistics about the infrastructures and E-tourism indexes were collected from different organizations across the cities under study. Then, they were classified via TOPSIS model. The hypotheses were tested by means of inquiry and statistical tests. The statistical population included citizens in Isfahan province based on the census in 2012 that were equal to 4,879,312. The sample size was obtained equal to 384 based on Cochran formula. Sample size of each city was determined via weighting method and the questionnaires were distributed randomly.

2. Definitions and Concepts

2.1 Information Technology

Information technology has been defined by the Information Technology Association of America (ITAA) as follows: "it studies, designs, develops, implements, supports, and manages computer-based information systems especially software and hardware programs" (Proctor, 2011: Introduction).

2.2 E-tourism

E-tourism is the technique of combining electronic businesses and information technology in preparation, arrangement and supporting methods and tools to offer higher quality services with lower costs to tourists. Indeed, E-tourism is electronic offering of all services which were used by tourists traditionally in the past as well as services which have become possible via information technology (Sarfarazi, 2011: 17). Papoli Yazdi believes that E-tourism can be defined as follows: "E-tourism is using of modern technologies especially information and communications technology in two aspects of tourism supply and demand in which fields of marketing and tourism perspective of destinations are provided besides the required services are offered (Papoli & Saghaee, 2010: 140-141).

2.3. E-tourism System

E-tourism includes offering the required services by tourists either foreign or domestic tourists through information technology and electronic tools in doing tourism activities from planning to implementation. E-tourism is the common area between traditional tourism, professional affairs such as management, marketing, financial and information technology. It is the connection point between traditional tourism and information technology (Pourfaraj, 2012: 52).

2.4. Virtual Tourism

Buhalis, one of the popular characters in this field, has defined virtual tourism in this way: "virtual tourism means digitalization of all processes and value chains in tourism, traveling, hospitalization and food industries. It includes E-commerce at tactical level and uses information and communication technologies to maximize efficiency and effect of the tourism organization" (Buhalis, 2004: 238).

2.5. Classification of Tourism Destinations

Use of quantitative methods and measures to classify settlements in spatial system of regions not only makes the difference among the settlements clear but also it is a measure to determine centrality as well as different types of required services and modification of inequality among the settlements (Hekmatnia & Musavi, 2007: 207).

Classification of tourism destinations can be regarded as a part of spatial planning process in a region, since spatial planning aims to recognize the resources and how to exploit them along with predicting the future status of desired settlement of humans and their performance in the nature to provide reasonable, balanced and desired economic growth in the country and avoid imbalance and destructive and negative reflections in the space (Masumi Eshkevari, 2009: 18).

3. Data Analysis

3.1. Classification of Cities Using TOPSIS Technique

TOPSIS technique is the most helpful multiple attribute decision making method for investigation of the problems in the real world that was proposed by Huang and Youn for the first time (Shamaei, 2012: 30). The required data and statistics in this survey were extracted from statistics of the Telecommunication Company and Communications Regulatory Authority in 2013. Then weighting method based on population of each city was used to determine the indexes in each city. The intended measures for classification as infrastructures related to E-tourism are shown in Table 1. This is referred to as decision-making matrix of

indexes. There are nine indexes including fixed telephone line penetration rate and mobile phone penetration rate for every 100 persons (according to the contract by the Telecommunication Company), ADSL internet penetration rate for every 1000 persons, WiMax internet penetration rate for every 10000 persons, the number of public telephone for every 10000 persons, the number of Electronic counter government offices for every 100000 persons, the number of offices of urban communication services for every 100000 persons, the number of rural ICT offices and the number of rural areas with telephone connection for each 100 villages.

Table 1. Decision-making matrix of indexes in cities

City	Fixed telephone line penetration rate	Mobile phone penetration rate	ADSL internet penetration rate	WiMax internet penetration rate	The number of public telephones	The number of Electronic counter government offices	The number of offices of communication services (urban)	The number of rural ICT offices	Rural areas with telephone connection
Aran o Bidgol	38.33	27.13	36.9781	0	35.00703	5.132996	7.287567	31.11111	45.45455
Ardestan	62.92	43.8	24.05507	0	63.76042	12.07584	18.40197	20.49689	72.56637
Isfahan	47.68	129.91	52.04924	141.8563	27.7347	8.049041	8.745466	3.986892	45.4142
Borkhar	35.74	21.58	23.11513	0	17.53371	11.93394	12.49102	11.11111	31.25
Tiran and Karvan	40.21	32.9	17.40843	0	36.78654	5.793155	7.285974	59.67742	47.61905
Chadegan	29.2	19.29	26.75152	0	37.41677	8.838607	14.01149	26.98413	69.56522
Khomeini Shahr	33.06	31.57	23.04022	37.41629	17.90591	6.417888	8.29424	120	64.28571
Khansar	46.82	173.62	46.2943	0	57.36668	6.168461	9.37295	50	47.91667
Khur and Biabanak	71.22	28.19	64.91317	0	47.20958	11.24038	7.301935	36.66667	36.70886
Dehaghan	40.83	33.26	44.91448	0	32.71725	14.34967	31.5799	47.82609	30.35714
Semirom	35.69	29.69	15.31201	0	21.21543	4.61205	5.780514	12.71186	46.15385
Shahin Shahr	41.79	42.1	6.384039	133.7342	38.71119	9.66508	10.92067	19.04762	39.45578

and Meimeh									
Shahreza	41.64	69.5	42.89392	4.078767	25.8099	10.02975	13.0732	26.66667	50.54945
Fereydan	29.45	34.09	37.54562	0	33.10635	5.016114	10.30105	34.24658	67.27273
Fereydunshahr	33.15	25.05	18.57359	0	37.3037	2.60865	5.169829	17.64706	50
Falavarjan	33.53	27.5	14.30688	0	14.29069	6.07253	11.70892	50	65.30612
Kashan	46.86	41.86	28.33278	14.59624	27.3061	5.25712	6.807213	38.67925	47.64706
Golpayegan	45.57	39.68	36.69452	0	31.20749	8.00192	11.35025	24.24242	73.80952
Lenjan	36.97	46.74	33.01286	0	23.32563	5.27362	10.85121	42.55319	52.52525
Mobarakeh	39.25	38.58	29.15511	0	23.27948	10.45486	12.18218	33.33333	45.96774
Naeen	53.56	193.7	44.62011	0	56.98978	10.50503	10.38673	7.027027	60.12461
Najaf Abad	37.59	52.93	19.68111	3.89626	17.21681	7.992327	7.239688	44.44444	51.25
Natanz	102.48	47.59	33.94967	0	74.10213	9.469921	14.20606	37.31343	68.53933

Source: Communications Regulatory Authority and Telecommunication Company 2013; Statistical yearbook of Isfahan province in 2013 and calculations of the researcher

TOPSIS technique

In this technique, the distance between an alternative with the positive ideal alternative and also the negative ideal alternative is considered. It means that the selected alternative should have the least distance with the positive ideal solution and at the same time has the highest distance with the negative ideal solution.

- Primary matrix: it is the decision-making matrix.
- Crating the normalized matrix (ND) based on relation (1): (Rostami, 2007: 43)

Thus, each element of the assumed decision-making matrix is divided by the norm of *j*th column (in lieu of xj index). In this way, all columns of the assumed matrix have similar length (from the correspondent vector) and it will be easy to compare them totally. In this method, the decision-making matrix is first changed into a normalized matrix (ND) via the following formula:

$$n_{ij} = \frac{r_{ij}}{\sqrt{\sum_{i=1}^{m} r_{ij}^2}} \qquad (1)$$

- Creating *P*ij matrix based on relation (2): (Shamaei, 2012: 31)

$$Pij = \frac{r_{ij}}{\sum_{i=1}^{m} r_{ij}} \qquad (2)$$

It means that each value is divided by the mean of *i*th column (in lieu of positive aspect for all

indexes).

- Calculation of Eij, Dij, and Wij

Calculating Ej based on relation (3):

$$Ej = k\sum_{i=1}^{m} Pij \times lnPij \quad , \quad k = \frac{1}{\ln m} \qquad (3)$$

Calculating Dj based on relation (4):

$$Dj = 1 - Ej$$

Calculating Wj based on relation (5):

$$\text{Wj} = \frac{d_j}{\sum d_j}$$

- Creating normalized weighted matrix (D):

Creating normalized weighted matrix based on relation (6) (ibid., 33)

$$D = ND \times WN \qquad (6)$$

- Calculation of Di and CLi and classification of cities:

In this step, positive ideal solution (A^+) and negative ideal solution (A^-) are obtained as follows:

Positive ideal solution: $A^+ = \{(max_i\ V_{ij}|j \in J), (min_i\ V_{ij}|j \in J')\ |i = 1,2,\dots,m\} = \{V_1^+, V_2^+, \dots, V_j^+, \dots, V_n^+\}$ (7)

Negative ideal solution: $A^- = \{(min_i\ V_{ij}|j \in J), (max_i\ V_{ij}|j \in J')\ |i = 1,2,\dots,m\} = \{V_1^-, V_2^-, \dots, V_j^-, \dots, V_n^-\}$ (8)

So that:

J= {j= 1, 2, …, n | *j*s related to the desired indexes}

J'= {j= 1, 2, …, n | *j*s related to the desired indexes}

Now, distances between each alternative and the ideal alternatives are calculated using Euclidean method:

$= \left\{\sum_{j=1}^{n}(V_{ij} - V_j^+)^2\right\}^{0.5}$ (9) i= 1, 2…m; the distance between *i*th alternative and the positive alternative= d_i^+

$= \left\{\sum_{j=1}^{n}(V_{ij} - V_j^-)^2\right\}^{0.5}$ (10) i= 1, 2…m; the distance between *i*th alternative and the negative alternative= d_i^-

In the next step, relative closeness of *Ai* to the ideal solution is calculated as follows:

$$cl_{i+} = \frac{d_{i-}}{d_{i+} + d_{i-}} \quad ; \quad 0 \le cl_{i+} \le 1 \qquad i=1, 2\dots m \ (11)$$

As it is shown in relation (9), if $\text{Ai} = A^+$, then d_i^+ =0. Therefore, cl_{i+}=1 and if $\text{Ai} = A^-$, then $d_i^- = 0$ and cl_{i+}= 0. As a result, whatever Ai is closer to the ideal solution (A^+), cl_{i+} will be closer to one and whatever Ai is closer to the negative ideal alternative (A^-), cl_{i+} will be closer to zero. Thus, the existing alternatives can be classified in descending order of cl_{i+} (Asgharpour, 2010: 261-262).

According to the results of TOPSIS model, some cities such as Isfahan, Shahin Shahr and Khomeini Shahr obtained the superior ranks in terms of E-tourism development indexes. (TOPSIS tables are not presented here because of their high volume and classification of cities is shown in Table 2).

3.2. Information literacy and degree of believing in E-tourism in Isfahan province

There are two types of questions in the questionnaire including 1) measuring electronic literacy and 2) degree of believing in E-tourism. The information in the questionnaires was extracted by means of SPSS and Excel software to determine weight of each city.

Based on the obtained results and according to Table 2, Shahin Shahr has the highest mean with the weight equal to 3.11 and Borkhar has the lowest mean of electronic citizen indexes with the weight equal to 2.12. Also, Isfahan ranked third after Kashan. The difference among cities is not so high in this regard. Similarly, 36.06% of citizens were at a low level in terms of electronic literacy indexes; 24.59% at the moderate level and 36.35% at the high level across Isfahan. Only 39% of citizens in Isfahan have low electronic literacy and the other 61% have moderate and high electronic literacy. Therefore, status of electronic literacy across Isfahan province is desirable. According to Table 3, using credit cards achieved the highest rank among the indexes of electronic citizen in Isfahan province after telephone and mobile phone. This shows people are interested in using electronic monetary services.

Table 2. Weight of electronic literacy and believing in E-tourism separately in cities (extracted from the questionnaires)

City	Weight of believing in E-tourism	Weight of electronic literacy	Classification of electronic literacy	Classification based on E-tourism indexes (TOPSIS)
Aran o Bidgol	3.85	2.58	17	19
Ardestan	3.29	2.88	9	15
Isfahan	3.65	3.03	3	1
Borkhar	3.31	2.12	23	21
Tiran and Karvan	3.72	2.49	19	11
Chadegan	3.24	2.18	22	20
Khomeini Shahr	3.27	3.01	5	3
Khansar	3.55	2.69	16	6
Khur and Biabanak	4.06	2.82	11	12
Dehaghan	3.65	2.94	6	7
Semirom	3.20	2.26	20	23
Shahin Shahr and Meimeh	3.23	3.11	1	2
Shahreza	4.31	2.86	10	8
Fereydan	3.46	2.54	18	17
Fereydunshahr	3.90	2.22	21	22
Falavarjan	3.98	2.74	15	14
Kashan	3.16	3.10	2	4
Golpayegan	3.66	3.02	4	18
Lenjan	3.65	2.77	14	13
Mobarakeh	3.10	2.79	13	16
Naeen	3.88	2.90	8	5
Najaf Abad	3.31	2.93	7	9

Natanz	3.88	2.80	12	10

Source: calculations of the researcher

Table 3. Description of electronic literacy information based on the data of questionnaire across Isfahan province

Number	Questions	Very high	High	Moderate	Low	Very low	Mean of weights	Rank
1	How much do you use telephone, pager and mobile phone in a day?	160	152	59	13	-	4.2	1
2	How much do you use computer in a day?	85	100	104	57	38	3.36	4
3	How much do you use the internet in a day?	96	75	128	33	52	3.34	5
4	How much do you use WiMax and ADSL internet?	76	98	114	32	64	3.23	6
5	How much do you use SMS in a day?	96	108	97	51	32	3.48	3
6	How much do you use credit cards?	82	142	106	35	19	3.61	2
7	How much do you use electronic networks of banks and financial institutions?	18	32	84	110	140	2.16	16
8	How much do you have electronic or virtual purchase?	19	51	73	78	163	2.18	15
9	Spending your leisure time via working with the internet	82	60	119	53	70	3.08	9
10	Elimination of scientific, research and educational needs via internet	69	126	71	49	69	3.20	7
11	How much do you use the information offered by tourism agencies via internet?	34	35	111	93	111	2.45	13
12	How much do you use offices of electronic services of urban organizations?	4	52	83	131	114	2.22	14

13	How much do you use the offices of communication services, Electronic counter government offices and internet cafes?	18	82	103	98	83	2.62	11
14	How much do you use virtual cultural spaces (chat rooms, facebook, weblog, digital library, virtual cinema, museum, etc)?	58	50	105	40	131	2.65	10
15	How much do you study the news online?	73	84	101	66	60	3.11	8
16	How much do you use online websites to recognize the intended area for traveling?	44	53	87	84	116	2.54	12
17	How much do you use panorama (three dimensional) pictures to recognize an area before traveling?	34	25	60	86	179	2.09	17
	Percent	16.05	20.30	24.59	16.99	22.07		

Based on the obtained results and according to Table 2, citizens in Shahreza have the highest belief in E-tourism with weighted mean equal to 4.31 while the citizens in Mobarakeh have the lowest belief in E-tourism with weighted mean equal to 3.10. Also, the results reveal that 61.32% of participants agreed and totally agreed about believing in E-tourist and 19.26% had no idea. Similarly, 19.42% disagreed and totally disagreed. Among the questions on degree of believing in E-tourism across the whole province, believing in saving in time, place and space in tourism and creating more business opportunities in E-commerce using information technology ranked first simultaneously based on Table 4.

Table 4. Description of the information on believing in E-tourism based on the questionnaire's data in Isfahan province

Index	Totally agree	Agree	No idea	Disagree	Totally disagree	Mean of question
Enhancement of residents' digital literacy level (familiarity with computer and the internet) is effective on tourists' attraction.	117	157	63	20	27	3.75
Use of the information technology will save the time.	131	177	52	10	14	3.97

Use of the information technology will save the place and space.	133	170	62	5	14	3.97
Developing accessibility to telephone and mobile phone networks is effective on tourists' attraction.	69	152	95	43	25	3.77
Development of high speed internet is effective on attracting the tourists.	113	146	77	29	19	3.9
Use of three-dimensional pictures (panorama) of tourism places in websites will increase the number of tourists.	73	127	110	33	41	3.28
It is possible to develop virtual tourism in the city where I live.	93	81	113	69	28	3.11
Traditional (real) tourism is flourished if E-tourism is developed.	133	145	30	53	23	3.91
Information technology causes to increase the number of tourists who use tourism attractions.	96	162	81	32	13	3.88
Information technology causes to decrease damages to tourism attractions.	81	166	62	49	26	3.46
Development of the information technology increases tourism security.	39	126	86	97	36	3.18
Virtual tourism is as attractive for tourists as real tourism.	13	99	39	115	118	2.37
Use of the information technology decreases environmental pollution in the city where I live.	55	188	90	28	23	3.67
Information technology creates more business opportunities in E-commerce in tourism.	118	154	81	24	7	3.97
Use of the information technology is the best way to identify tourism destinations.	50	143	86	59	46	3.14
Development of up-to-dated and active websites about tourism attractions of the city where I live will attract tourists.	81	172	74	35	22	3.79
Use of promotional messages can be a good way to introduce	75	168	56	61	24	3.71

tourism attractions of the city where I live.						
Percent	22.52	38.8	19.26	11.67	7.75	-

4. Analysis of the Hypotheses

Hypothesis 1: It seems that central cities of Isfahan province have a better status in terms of E-tourism indexes.

The cities in Isfahan province are divided into five levels based on the distance with center of the province and then they are divided into five other levels based on the ranks obtained from TOPSIS (E-tourism development).

Table 5. Classification of cities based on the distance between cities and center of Isfahan province

Name of the distance group (kilometer)	Very close (0-40)	close (40-100)	Not so close (100-150)	Far (150-200)	Very far (more than 200)
City	Isfahan (0) Khomeini Shahr (11) Falavarjan (12) Shahin Shahr (15) Borkhar (15) Najaf Abad (23) Lenjan (39)	Mobarakeh (46) Tiran and Karvan (49) Shahreza (73) Dehaghan (95)	Chadegan (107) Natanz (108) Fereydan (119) Ardestan (127) Khansar (139) Fereydunshahr (146) Semirom (150)	Naeen (152) Golpayegan (162) Kashan (189) Aran o Bidgol (194)	Khur and Biabanak (420)

Table 6. Classification of cities in terms of E-tourism development

Name of the group	Developed	Developing	Less developed	Underdeveloped	Very poor
TOPSIS rank	1-3	4-8	9-13	14-18	19-23
City	Isfahan Shahin Shahr Khomeini Shahr	Kashan Naeen Khansar Dehaghan Shahreza	Najaf Abad Natanz Tiran and Karvan Khur and Biabanak Lenjan	Falavarjan Ardestan Mobarakeh Fereydan Golpayegan	Aran o Bidgol Chadegan Borkhar Fereydan Semirom

Having compared Tables 5 and 6, it became clear that among 11 central cities (their distance with the center of Isfahan province is less than 100 kilometers) only five cities have a desirable status in terms of electronic technology. In other words, just 45.4% of central cities have a good status. Thus, hypothesis one is rejected.

Hypothesis 2: It seems that cities with more tourism potential have a better status in terms of E-tourism indexes.

The cities in Isfahan province are divided into three levels (high number potential, moderate number potential and low number potential) in terms of the number of tourism and ecotourism potentials.

Table 7.
Classification of cities in terms of the number of tourism and ecotourism potentials

Name of the group (the number of potentials)	High number potential (30 and more)	Moderate number potential (10-20)	Low number potential (0-10)
City	Isfahan 47 Naeen 29 Shahreza, Natanz 28 Khur and Biabanak, Najaf Abad 25 Khansar 24 Aran o Bidgol 23 Dehaghan 22 Kashan 21	Tiran and Karvan 18 Ardestan 17 Lenjan, Semirim, Golpayegan 15 Mobarakeh, Fereydunshahr 14	Fereydan, Falavarjan 11 Khomeini Shahr 10 Chadegan 9 Shahin Shahr 8 Borkhar 5
Number of cities	10	7	6

Having compared Tables 6 and 7, it became clear that 10% of high potential cities (Isfahan) are the most developed cities. Also, 50% of these high potential cities are developing. Generally, 60% of high potential cities have a good development status and another 40% do not have a desirable status. Thus, hypothesis two is confirmed.
Hypothesis 3: It seems that there is a positive and significant relationship between citizens' electronic literacy and E-tourism development.
Spearman correlation test was used to test this hypothesis. The results are shown in Table 8.

Table 8.
Testing the third hypothesis

	E-tourism development	
Citizens' electronic literacy	Spearman correlation	0.220
	Number	23
	Significance level	0.000

The result of the test reveals that there is a positive and direct correlation between citizens' electronic literacy and E-tourism development that is relatively equal to 0.770. Hypothesis three is confirmed.

5. Conclusion

Isfahan, Shahin Shahr and Meimeh and Khomeini Shahr are in first to third grade, respectively in terms of E–tourism indexes. Fereydunshahr and Semirom have been graded as last ones. There is a high correlation between electronic literacy and E-tourism development- more than 60% of the residents have a desirable electronic literacy (high and moderate). Shahin Shahr has the highest rank of electronic literacy and Borkhar has the lowest rank. Using of telephone, pager and mobile phone across the whole province ranked first and using of credit cards ranked second. More than 61% of residents agreed with E-tourism and less than 20%

disagreed. Shahreza and Mobarakeh had the highest and lowest ranks in terms of believing in E-tourism respectively. Believing in saving in time, place and space in tourism and creating more business opportunities in E-commerce using information technology ranked first simultaneously among the residents in Isfahan province.

6. Suggestions

Equal distribution of E-tourism infrastructures across all cities in Isfahan province and making regional balance in this regard are suggested that require more cooperation of the Telecommunication Company with Cultural Heritage Organization and the governorships in cities.

It is suggested to pay more attention to undeveloped cities such as Semirom, Fereydunshahr, Borkhar, Chadegan, Aran o Bidgol, Golpayegan, Fereydan, Mobarakeh, Ardestan, and Falavarjan that have lower information technology infrastructures and offer E-tourism development schedule in them especially in Golpayegan and Ardestan which are at a high level in terms of electronic literacy and at a moderate level in terms of the number of potentials.

It is also suggested to issue electronic credit cards for use in tourism attractions and sell them online for domestic and international visitors

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