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Determining and ranking of factors affecting the performance of tourism services

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Abstract

This study by analyzing the Analytical Hierarchy and Delphi Analytical Process in Fuzzy Environment (FDAHP) has been used to determine the factors affecting the performance of tourist tour services and their importance. Because the service function is a combination of different attributes, including many intangible features, it is difficult to determine and the importance of the factors affecting it. In this study, 12 criteria were considered as factors affecting the quality of tourism services. Using the FDAHP merger technique, fifteen managers from different travel agencies ranked the general criteria and sub-criteria. Research results can help tourists to improve service performance and quality, and provide a benchmark for evaluating tours by travel agencies to meet customer-specific standards.

Keywords: Tour Operator; Service Quality; Fuzzy Delphi; Fuzzy AHP; Selection Criteria

1. Introduction

Various technological advances of this century have led to improvement of communication, transportation, the increase of speed and relative comfort of travel that, consequently, a great revolution occurs in the tourism industry. Followed by, creating centers and tours services and its related activities was developed, so that foreign tourism in recent years has been a significant source to meet the currency needs and employment of many countries and as an invisible export item plays an important role in the global business arena. So, now, after the oil and automobile industry, is considered as the world's third export industry (Ghafari and Torki, 2017). According to the information, World Tourism Organization and UNESCO, Iran is among the top ten countries of the world with the top tourism attractions (Karoubi, 2009). Iran as one of the developing countries that its oil reserves as the main source of income will come to an end in not too distant future, for creating a comprehensive and sustainable development and also for replacing new income sources instead of petroleum resources requires using of all its features and capabilities. In this regard, the tourism industry will be illustrated which according to the figures published by the World Tourism Organization has become the largest income source of the world in the new millennium (Zangi Abadi, 2010). Therefore, travel agencies as tourism medium play an important role here.

The quality of presented services in tours is known as a key factor in services differentiation and creating competitive advantage (Crompton and Mackay, 2018). The process in which customers evaluate their shopping, and hence with determining the satisfaction rate, increase the Probability of further repurchase, is very important for all marketers and businesses (Zeithaml, Berry, and Parasuraman, 2018; Brown and Swartz, 2019).

Determining effective factors on the quality of tourist tour in recent years in the leisure and tourism literature has attracted a lot of interest toward itself (Crompton and Mackay, 2018). However, till today, only a few comprehensive efforts is done to identify the effective factors on the quality of the tour in the tourism industry particularly (Lin and et al, (2019); Lee and et al (2012); Wang and et al (2010)). Therefore, in this research, we will study and prioritize the effective factors on the quality of tours by using the combination of Fuzzy Delphi Technique and Fuzzy Analytic Hierarchy Process (FDAHP). In the second section, the existing literature and identifying the criteria influencing the quality of tours are discussed. The third section is dedicated to the research methodology, the integration of fuzzy Delphi techniques and fuzzy analytic hierarchy process. In the fourth section we will analyzed the data. The fifth section provides the conclusion.

2. Identifying the Criteria

Reimer (2010) states that tour executers combine various tourism products in one package. Thus, the presentation of these packages and their features are more complex than other service industries (Wang, Hsieh, Chou, and Lin, 2017). The service quality can be considered as a composite of various attributes (Wang et al., 2017). According to the studies such as Lin et al (2019) 33 criteria were considered as effective factors on the quality of the tour. Lee et al (2012) assess the quality of tours web sites in a paper. They have considered 17 criteria for evaluation of tours web sites. Akincilar and Dagdeviren (2014) also

in a paper assess hotel web sites with 27 criteria. Furthermore, previous studies have shown that the host travel agencies should choose a proper executer carefully to ensure of presenting good service in tours. Wang et al (2010) have been introduced eight dimensions for presenting the services by tour operators. Based on previous studies, in our research, we will offer 12 criteria and 60 sub-criteria for the effective factors on the quality of tours which are shown in Table 1.

Table 1. Criteria and sub-criteria of the effective factors on tour quality

Criteria	**sub-criteria**
Pre-tour information	Having complete and comprehensive information
	presenting timely information
	providing information voluntarily
	having physical activity in tour program
	having group activity in tour program
	devoting leisure to tourists
	possessing optional programs in tour
	having a special program (Watching the wildlife / flower gardens, etc.)
	the tour program which includes three meals
	creating an environment to make friend on the tour
	flexibility of tour time
	the tour price
	the tour information in different ways
Hotel	having a good relationship with hotels
	considered hotels ratings
	considered hotels prices
	hotel location
	hotel service quality
	Hotel competence (Consistency and being worthy)
Restaurant	food quality and its taste in the restaurant
	the health of restaurant
	the quality of restaurant service
	restaurant location
	restaurant prices
Tour program location	the specialty of tour program location
	the route of tour program
	tour program price
	providing information about tour program specifications
	the proper design layout of considered tour programs
Purchasing	the assurance of purchasing quality
	purchasing without pressure
	the route of purchase
	affordable rates
	taking auctioneer stores into consideration
Tour operator crisis management	being away from the stresses of tour works
	having authorization to cancel the tour if whatever unexpected event happen
	Creating a good experience and shareable

	the tour ability to deal with unanticipated problems
	the safety of tour
	possessing the accident and incident insurances
Driving & vehicle	vehicle quality
	driving skill
	the quality of services (good behavior and …)
Local guide	the professionalism of local guide
	language skills
	the quality of services (the guide)
Productivity and efficiency Web site	finding information on the web site easily
	linking to other web sites easily
	quick view of web page
	presenting other services on the web site (buying charges, etc.)
Web Security	preserving the user privacy
	the confidentiality of information
	avoiding the stealing of customer information
Reliability of Web	the proper functioning of the web site
	the unusual occurrence of web site crash
	the services of providing useful information on the web site
	displaying the correct information
Response	rapid response to customer complaints
	expert information services
	the mechanism to deal with the problem

3. Methodology FDAHP

3.1 Fuzzy sets and fuzzy numbers

Zadeh (1965) for handling ambiguity of human thought first presented the fuzzy set theory, oriented to the uncertainty rationality due to inaccuracy or ambiguity. A major donation of fuzzy set theory is its ability of stating uncertain data. Furthermore, the theory enables mathematical programming and operators to enforce to the fuzzy field. A fuzzy set includes a section of objects with grades continuum of membership. This kind of set is described by a membership (typical) function, which appoints to each object a membership grade arranging between zero and one. With various daily problems of decision making of different intensity, the consequences can be deceptive if the fuzziness of people decision making is not considered as well (Tsaur et al., 2002). The theory of Fuzzy sets supplying a more widely structure than the theory of classic sets, has been promoting to ability of mirroring real world (Ertugrul&Tus, 2007).

The theory of fuzzy set is preferable means for modeling inaccuracy rising from intellectual phenomenon which are neither stochastic nor random. Human are deeply absorbed in the decision analysis process. A logical approach for making the decision should consider as well the subjectivity of human, rather than using just objective likelihood criterions. This posture, for inaccuracy of human conduct led to investigate a novel decision analysis domain fuzzy decision making (Lai & Hwang, 1996). A character '~' will be located over a symbol when the symbol stands for a fuzzy set. A triple fuzzy number (TFN), $\tilde{M}$ is displayed in Fig. 1. A TFN is symbolized plainly as (*l*,*m*,*u*). Correspondingly, the parameters *l*, *m* and *u*

symbolize the smallest probable value, the most favorable value, and the biggest probable value which depict a fuzzy occurrence.

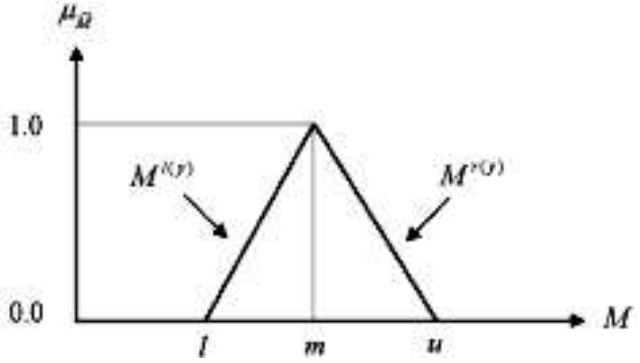


Fig1. A triangular fuzzy number, $\tilde{M}$

Each TFN has straight representations on its right and left side such that its function of membership can be explained as:

$$\mu(x \mid \tilde{M}) = \begin{cases} 0, & x \prec l \\ (x-l)/(m-l), & \mathrm{l} \le \mathrm{x} \le \mathrm{m} \\ (u-x)/(u-m), & \mathrm{m} \le \mathrm{x} \le u \\ 0, & x \succ u \end{cases} \quad (1)$$

A fuzzy number can constantly be bestowed by its similar right and left state of each membership degree:

$$\tilde{M} = (M^{l(y)}, M^{r(y)}) = (l + (m-l)y, u + (m-u)y), \qquad \mathrm{y} \in [0,1] \quad (2)$$

Where r(y) and l(y) symbolize respectively the right side representation and the left side representation of a fuzzy number. Large numbers of hierarchical procedures for fuzzy numbers have been improved in the literature. These procedures may bestow various hierarchical consequences and most procedures are tiresome in pictorial manipulation demanding complicate mathematical computation. Kahraman (2001) and Kahraman et al. (2002) have been described the algebraic performances with fuzzy numbers.

3.1 Fuzzy Delphi Analytic Hierarchy Process

The Analytic Hierarchy Process (AHP) first suggested by Saaty (1980), is an approach which is appropriate for dealing with complicate systems connected to a choice making from among some options and which prepares a comparison of the measured alternatives. The AHP is on the basis of the problem subdivision in a hierarchical form. Actually, the AHP aids systematize the logical analysis of the difficulty by separating it into its individual parts; then the analysis provides an assistance to the decision makers who, making some forming-pairs comparisons, can esteem the effect of the measured components

in the hierarchical construction; Furthermore, the AHP can bestow a favor list of the measured optional solutions (Bentivegna et al., 1994; Roscelli, 1990; Saaty, 1980; Saaty& Vargas, 1990).

The AHP is a device which can be utilized for analyzing various types of political, social, technological and economic problems, and it utilizes both quantitative and qualitative variables. The analysis basic doctrine is the probability of linking information, on the basis of knowledge, for making previsions or decisions; the experience can lead to the knowledge or the knowledge taken from the application of other devices. Among the various situations in which the AHP can be used, indicate can be constructed of the invention of a priorities list, the selection of the foremost policy, the best resources allotment, the results foresight and temporary reliance, the estimation of planning and risks (Saaty& Vargas, 1990). In spite of the fact that the AHP is to catching the knowledge of the expert, still the customary AHP cannot really mirror the style of human thinking (Kahraman et al., 2003).

The customary AHP method is troublesome in which it applies a precise value to declare the opinion of decision maker in an alternatives comparison (Wang & Chen, 2007). And frequently AHP method is criticized because of its use of unstable scale of assessments and its lack of ability to sufficiently deal in the inherent imprecision and ambiguity in the forming pair process of comparison (Deng, 1999).

The method of Delphi is a method for organizing a productive group communication process by preparing response of donations of data and estimation of group assessments to make individuals capable to reappraise their assessments. Delphi Method utilize brittle tool and number to become the estimation criterion, these defects can deform the opinions of experts. Ishikawa et al. (Ishikawa et al. 1993), for dealing with the human participants' assessments fuzziness in customary Delphi method, assumed the theory of fuzzy set suggested by Zadeh (Zadeh, 1965) into the method of Delphi to enhance time-consuming troublesome like the convergence of the opinions of experts demonstrated by Hwang and Lin (Hwang and Lin, 1987). The FDM is a methodology in which experts subjective information are changed into resembling objective information utilizing the fuzzy operations and statistical analysis. According to (Kaufmann and Gupta, 1988) the principal benefits of FDM are that it can decrease the quantity of studies to save cost and time and furthermore, it includes the individual characteristics of whole experts. This study suggests the FDAHP using for determining the main criterion weights.

Estimate the associated fuzzy weights of the decision components utilizing the subsequent three stages on the basis of the FDM and accumulate the associated fuzzy weights to acquire scores for the alternation of decision. (1) Calculate the triple fuzzy numbers (TFNs) $\tilde{a}_{ij}$as delineated in Eq. (3). In this paper, the TFNs (displayed as Fig. 2) that depict the moderate, pessimistic, and optimistic judgment are utilized to symbolize the experts' opinions for each activity time.

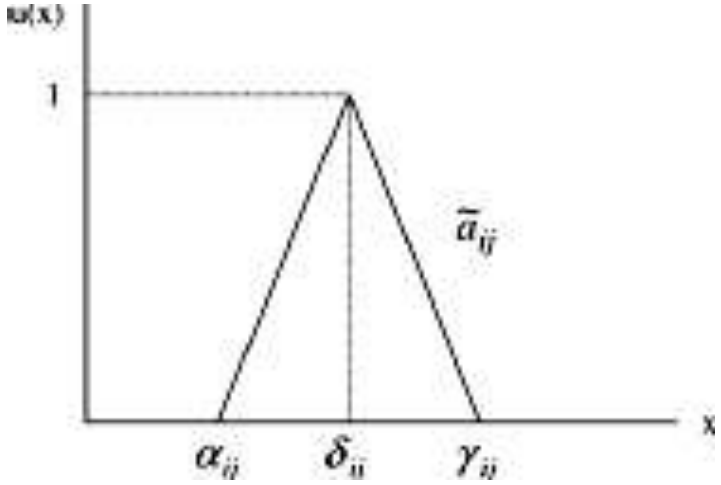


Fig 2. The memberships function of the Fuzzy Delphi Method.

$$\begin{cases} \tilde{a}_{ij} = (\alpha_{ij}, \delta_{ij}, \gamma_{ij}) & (3) \\ \alpha_{ij} = Min(\beta_{ijk}),\ \text{k=1,...,n} & (4) \\ \delta_{ij} = (\prod_{k=1}^{n} \beta_{ij})^{1/n},\ \text{k=1,...,n} & (5) \\ \gamma_{ij} = Max(\beta_{ijk}),\ \text{k=1,...,n} & (6) \end{cases}$$

Where, $\alpha_{ij} \le \delta_{ij} \le \gamma_{ij}$, $\alpha_{ij}, \delta_{ij}, \gamma_{ij} \in [1/9,1] \cup [1,9]$ and $\alpha_{ij}, \delta_{ij}, \gamma_{ij}$ are obtained from Eq. (4) to Eq. (6). α_{ij} indicates the lower bound and δ_{ij} indicates the upper bound. β_{ijk} indicates the relative intensity of importance of expert k between activities i and j. n is the number of experts in consisting of a group.

(2) Following outlined above, we obtained a fuzzy positive reciprocal matrix $\tilde{A}$

$$\tilde{A} = [\tilde{\alpha}_{ij}], \tilde{\alpha}_{ij} \times \tilde{\alpha}_{ji} \approx 1, \forall i, j = 1,2,...,n$$

Or

$$\tilde{A} = \begin{bmatrix} (1,1,1) & (\alpha_{12}, \delta_{12}, \gamma_{12}) & (\alpha_{13}, \delta_{13}, \gamma_{13}) \\ (1/\gamma_{12}, 1/\delta_{12}, 1/\alpha_{12}) & (1,1,1) & (\alpha_{23}, \delta_{23}, \gamma_{23}) \\ (1/\gamma_{13}, 1/\delta_{13}, 1/\alpha_{13}) & (1/\gamma_{23}, 1/\delta_{23}, 1/\alpha_{23}) & (1,1,1) \end{bmatrix}$$

(3) Calculate the relative fuzzy weights of the evaluation factors.

$$\tilde{z}_i = [\tilde{a}_{ij} \otimes ... \otimes \tilde{a}_{in}]^{1/n}, \tilde{W}_i = \tilde{z}_i \otimes (\tilde{z}_i \oplus ... \oplus \tilde{z}_n)^{-1} \quad (8)$$

Where $\tilde{a}_1 \otimes \tilde{a}_2 \cong (\alpha_1 \times \alpha_2, \delta_1 \times \delta_2, \gamma_1 \times \gamma_2)$; the symbol $\otimes$ here denotes the multiplication of fuzzy numbers and the symbol $\oplus$ here denotes the addition of fuzzy numbers. $\tilde{W}_i$ is a row vector in consist of a fuzzy weight of the ith factor. $\tilde{W}_i = (\omega_1, \omega_2, ..., \omega_n), i = 1, 2, ..., n$ and W_i is a fuzzy weight of the ith factor.

4. Result

In this study, 15 managers of Iranian travel agencies were selected to determine the effective factors on the quality of tours. The criteria and sub-criteria identified in the existing literature are presented and comparisons were made by them. The research methodology has specified in the following tables computationally.

Table 2. Results of FDAHP technique for the sub-criteria of Pre-tour information

FDAHP(Pre-tour information)	Z_I	WEIGHT	DFUZZY
Having complete and comprehensive information	(0.540, 1.135, 2.826)	(0.015, 0.087, 0.571)	0.09015876
presenting timely information	(0.562, 1.114, 2.960)	(0.015, 0.085, 0.598)	0.092202069
providing information voluntarily	(0.238, 0.739, 2.352)	(0.006, 0.056, 0.475)	0.055961873
having physical activity in tour program	(0.259, 0.957, 3.129)	(0.007, 0.073, 0.632)	0.06896619
having group activity in tour program	(0.290, 0.944, 2.167)	(0.008, 0.072, 0.438)	0.063138758
devoting leisure to tourists	(0.360, 1.056, 3.109)	(0.010, 0.080, 0.628)	0.079346649
possessing optional programs in tour	(0.514, 1.086, 3.592)	(0.014, 0.083, 0.726)	0.094684233
having a special program (Watching the wildlife / flower gardens, etc.)	(0.349, 0.977, 2.840)	(0.009, 0.074, 0.574)	0.074263198
the tour program which includes three meals	(0.520, 1.084, 3.075)	(0.014, 0.083, 0.622)	0.090195926
creating an environment to make friend on the tour	(0.324, 1.080, 2.695)	(0.009, 0.082, 0.545)	0.073703406
flexibility of tour time	(0.249, 0.861, 2.296)	(0.007, 0.066, 0.464)	0.059293603
the tour price	(0.319, 1.109, 2.993)	(0.009, 0.084, 0.605)	0.076538459
the tour information in different ways	(0.424, 0.974, 2.646)	(0.011, 0.074, 0.535)	0.077327531

Table 3. Results of FDAHP technique for the sub-criteria of hotel

Hotel	Z_I	WEIGHT	DFUZZY
having a good relationship with hotels	(0.449, 1.050, 2.264)	(0.034, 0.176, 0.900)	0.175720955
considered hotels ratings	(0.425, 0.993, 2.547)	(0.032, 0.166, 1.013)	0.176123689
considered hotels prices	(0.270, 0.922, 2.449)	(0.020, 0.154, 0.974)	0.145902467
hotel location	(0.505, 0.985, 2.052)	(0.038, 0.165, 0.816)	0.173034867
hotel service quality	(0.546, 1.099, 2.211)	(0.041, 0.184, 0.879)	0.188843123
Hotel competence (Consistency and being worthy)	(0.318, 0.924, 1.660)	(0.024, 0.155, 0.660)	0.135309677

Table 4. Results of FDAHP technique for the sub-criteria of restaurant

Restaurant	Z_I	WEIGHT	DFUZZY
food quality and its taste in the restaurant	(0.306, 0.941, 2.422)	(0.025, 0.187, 1.072)	0.171971746
the health of restaurant	(0.532, 1.096, 2.626)	(0.044, 0.218, 1.163)	0.223642094
the quality of restaurant service	(0.320, 1.016, 2.532)	(0.026, 0.202, 1.121)	0.181767289
restaurant location	(0.437, 0.939, 1.974)	(0.036, 0.186, 0.874)	0.180892441
restaurant prices	(0.664, 1.049, 2.532)	(0.055, 0.208, 1.121)	0.234408395

Table 5. Results of FDAHP technique for the sub-criteria of hotel

Tour program location	Z_I	WEIGHT	DFUZZY
the specialty of tour program location	(0.441, 0.968, 1.835)	(0.040, 0.193, 0.750)	0.180592896
the route of tour program	(0.320, 0.845, 1.598)	(0.029, 0.168, 0.653)	0.148073872
tour program price	(0.381, 1.040, 2.108)	(0.035, 0.207, 0.862)	0.184431991
providing information about tour program specifications	(0.679, 1.116, 2.491)	(0.062, 0.222, 1.019)	0.24197571
the proper design layout of considered tour programs	(0.626, 1.055, 2.848)	(0.057, 0.210, 1.164)	0.241741831

Table 6. Results of FDAHP technique for the sub-criteria of purchasing

Purchasing	Z_I	WEIGHT	DFUZZY
the assurance of purchasing quality	(0.320, 0.947, 1.974)	(0.027, 0.189, 0.895)	0.165288856
purchasing without pressure	(0.319, 1.040, 2.187)	(0.027, 0.207, 0.991)	0.176423372
the route of purchase	(0.384, 0.883, 2.091)	(0.032, 0.176, 0.948)	0.174959338
affordable rates	(0.488, 1.051, 2.782)	(0.041, 0.210, 1.261)	0.220934405

taking auctioneer stores into consideration	(0.695, 1.093, 2.992)	(0.058, 0.218, 1.356)	0.257919171

Table 7. Results of FDAHP technique for the sub-criteria of tour operator crisis management

Tour operator crisis management	Z_I	WEIGHT	DFUZZY
being away from the stresses of tour works	(0.346, 1.004, 2.691)	(0.022, 0.167, 1.119)	0.159588591
having authorization to cancel the tour if whatever unexpected event happen	(0.386, 0.988, 2.488)	(0.024, 0.164, 1.034)	0.160331617
Creating a good experience and shareable	(0.306, 1.035, 2.720)	(0.019, 0.172, 1.131)	0.155291476
the tour ability to deal with unanticipated problems	(0.711, 1.132, 3.429)	(0.044, 0.188, 1.425)	0.228852624
the safety of tour	(0.271, 0.911, 2.003)	(0.017, 0.151, 0.833)	0.129059453
possessing the accident and incident insurances	(0.386, 0.952, 2.639)	(0.024, 0.159, 0.097)	0.161485633

Table 8. Results of FDAHP technique for the sub-criteria of Driving & vehicle

Driving & vehicle	ZI	WEIGHT	DFUZZY
vehicle quality	(0.670, 0.988, 1.357)	(0.151, 0.329, 0.666)	0.321351077
driving skill	(0.630, 0.945, 1.587)	(0.142, 0.315, 0.779)	0.32687606
the quality of services (good behavior and …)	(0.737, 1.071, 1.493)	(0.166, 0.356, 0.733)	0.351795695

Table 9. Results of FDAHP technique for the sub-criteria of local guide

Local guide	ZI	WEIGHT	DFUZZY
the professionalism of local guide	(0.766, 1.049, 1.587)	(0.167, 0.348, 0.800)	0.360409149
language skills	(0.585, 0.891, 1.386)	(0.128, 0.296, 0.699)	0.298259041
the quality of services (the guide)	(0.630, 1.070, 1.608)	(0.138, 0.356, 0.811)	0.341520493

Table 10. Results of FDAHP technique for the sub-criteria of Productivity and efficiency Web site

Productivity and efficiency Web site	ZI	WEIGHT	DFUZZY
finding information on the web site easily	(0.819, 1.093, 1.861)	(0.116, 0.269, 0.756)	0.287438799

linking to other web sites easily	(0.532, 0.997, 1.699)	(0.076, 0.245, 0.690)	0.234175576
quick view of web page	(0.795, 1.201, 2.020)	(0.113, 0.295, 0.821)	0.30186334
presenting other services on the web site (buying charges, etc.)	(0.316, 0.776, 1.452)	(0.045, 0.191, 0.590)	0.171996234

Table 11. Results of FDAHP technique for the sub-criteria of Web Security

Web Security	**ZI**	**WEIGHT**	**DFUZZY**
preserving the user privacy	(0.694, 1.089, 2.026)	(0.132, 0.362, 1.145)	0.379853644
the confidentiality of information	(0.406, 0.926, 1.587)	(0.077, 0.308, 0.897)	0.277582663
avoiding the stealing of customer information	(0.670, 0.991, 1.650)	(0.127, 0.330, 0.933)	0.339894258

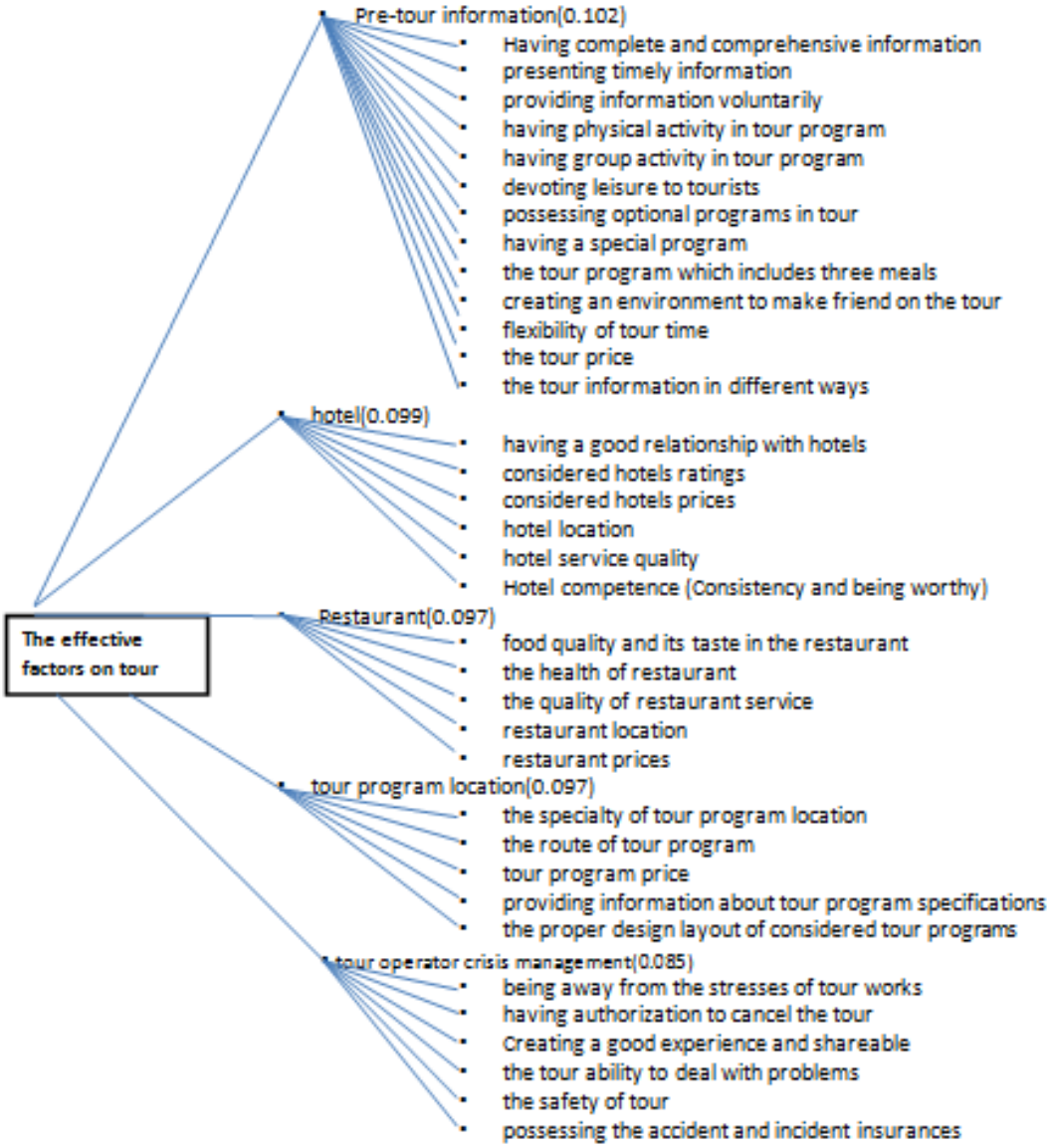
Table 12. Results of FDAHP technique for the sub-criteria of Reliability of Web

Reliability of Web	**ZI**	**WEIGHT**	**DFUZZY**
the proper functioning of the web site	(0.721, 1.047, 1.779)	(0.109, 1.261, 0.718)	0.273599069
the unusual occurrence of web site crash	(0.740, 1.061, 1.911)	(0.111, 0.265, 0.772)	0.283917866
the services of providing useful information on the web site	(0.562, 0.954, 1.452)	(0.085, 0.238, 0.587)	0.228240202
displaying the correct information	(0.452, 0.944, 1.495)	(0.068, 0.236, 0.604)	0.213534511

Table 13. Results of FDAHP technique for the sub-criteria of response

Response	**ZI**	**WEIGHT**	**DFUZZY**
rapid response to customer complaints	(0.630, 0.962, 1.442)	(0.144, 0.323, 0.696)	0.31882582
expert information services	(0.630, 0.962, 1.357)	(0.144, 0.323, 0.655)	0.312442088
the mechanism to deal with the problem	(0.811, 1.055, 1.587)	(0.185, 0.354, 0.766)	0.369191953

FDAHP technique was applied for the main criteria and effective factors on the quality of tours (criteria and sub criteria) are shown with their rank and importance in Figure 3.


The effective factors on tour
Pre-tour information(0.102)
Having complete and comprehensive information
presenting timely information
providing information voluntarily
having physical activity in tour program
having group activity in tour program
devoting leisure to tourists
possessing optional programs in tour
having a special program
the tour program which includes three meals
creating an environment to make friend on the tour
flexibility of tour time
the tour price
the tour information in different ways
hotel(0.099)
having a good relationship with hotels
considered hotels ratings
considered hotels prices
hotel location
hotel service quality
Hotel competence (Consistency and being worthy)
Restaurant(0.097)
food quality and its taste in the restaurant
the health of restaurant
the quality of restaurant service
restaurant location
restaurant prices
tour program location(0.097)
the specialty of tour program location
the route of tour program
tour program price
providing information about tour program specifications
the proper design layout of considered tour programs
tour operator crisis management(0.085)
being away from the stresses of tour works
having authorization to cancel the tour
Creating a good experience and shareable
the tour ability to deal with problems
the safety of tour
possessing the accident and incident insurances

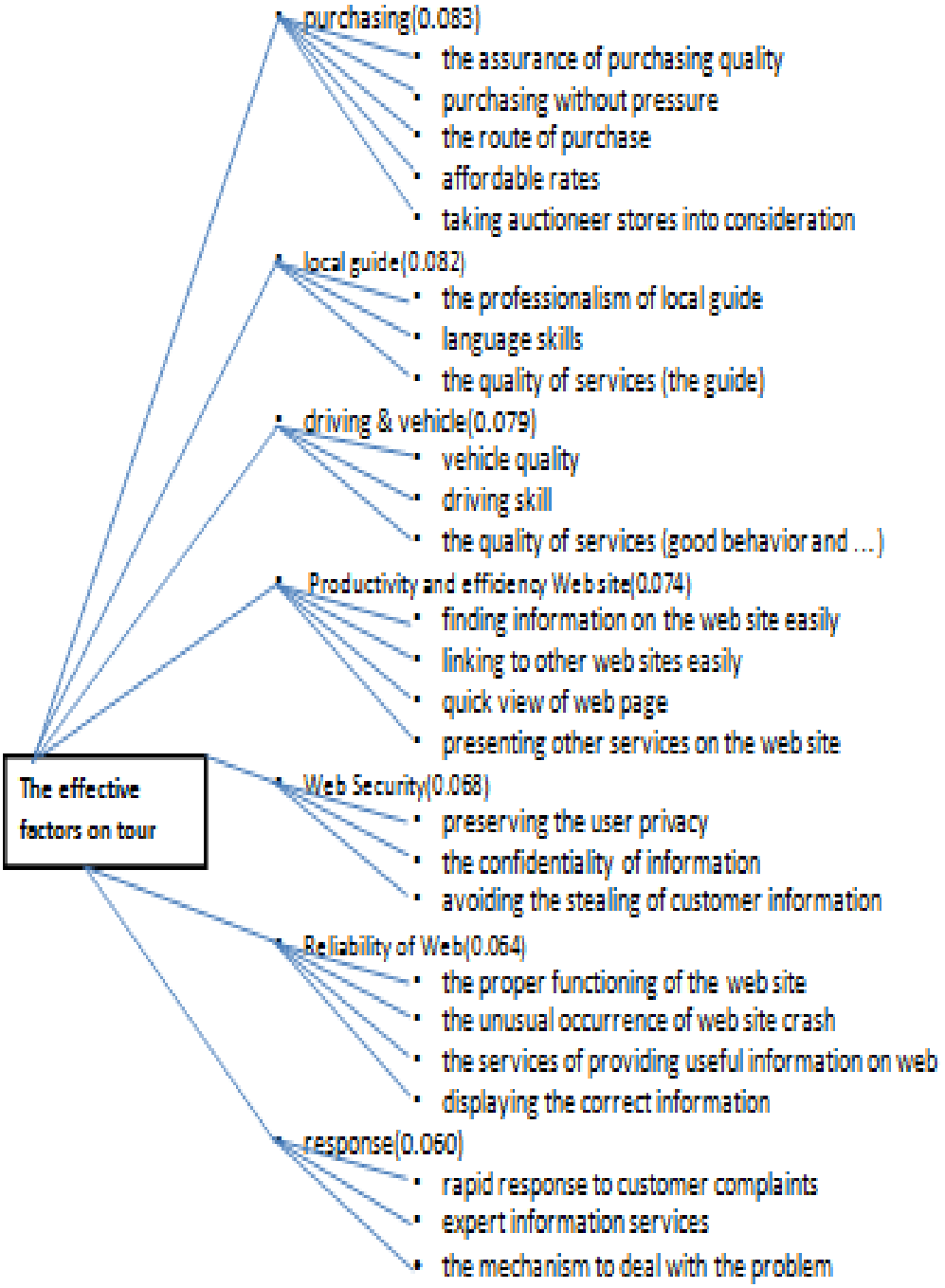


Figure 3. Model of effective factors on the quality of tours

5. Conclusions

This study has provided two empirical approaches for tourism marketing and tourism literature. Firstly, in this study, a comprehensive review of the tours services quality evaluating criteria and travel agencies (1) Criteria of the internet and information technology services and (2) Criteria of Tours services was conducted by tours and travel agency managers who have direct and constant communication with customers. Previous papers have noted the much smaller number of parameters or criteria and also have not evaluated simultaneously both dimensions of the Information Technology and Internet services, and tours services in the quality of tours (Lin and et al (2019); Lee and et al (2012); Wang and et al (2010)). Secondly, by using a combination approach of FDAHP, we have evaluated the importance of the effective factors on the performance of tours services. The methods of importance assessment consist of the following steps: (1) Identification of criteria and sub-criteria affecting the performance of tours services (2) Determination of the importance of each criterion and sub-criterion using FDAHP by the comments of all respondents, (3) Rating of each criteria and sub criteria.

The findings of this study cover several perspectives. First, among the 12 criteria and 60 sub-criteria of tours services, the criteria are equal in order of importance to "tour features ", "hotel", "restaurant", "The attractive areas program", "tour crisis management ", "purchasing", "local guide", "driving and car", "productivity and efficiency of the web site", "web security", "web reliability" and "accountability". Furthermore, the most important sub-criteria in each of the mentioned criteria is equal to "having optional tour programs", "the hotel services quality ", "restaurant prices", "providing information on the tour program characteristics ", "the ability of tour in dealing with unforeseen problems ", "taking the auctioneer store into account," "professionalism of local guide", "the quality of provided services by the driver of the car", "fast display of the web page", "preserving users privacy", "unusual occurrences of the site crash " and "the mechanism of dealing with the problem." These results showed that tours customers are mainly concerned regarding having optional plans on tours, considered hotel service quality and restaurant prices by the tour. This is because many tourist complains have been about the lack of optional programs in tours and the poor quality of hotel services and the high prices of the tours restaurants. Thus, a greater commitment of tours towards considering the optional program along with tours, the improvement of hotel services and the selection of restaurants with lower prices, causes improvement of the gap occurring in tour services.

Second, in the traditional studies, the importance degree is measured by using 5-point Likert scale (Chan et al 2010; Benítez et al., 2017). Typically, evaluators select one of the options "very low", "low", "medium", "high" and "very high" to assess the quality of services. However, assessment results are different and unclear according to various evaluators' opinions. Consequently, this method forces the evaluator to be limit to the too high or too low options, which in turn affect the precision of assessment. This study uses FDAHP technique for measuring linguistic variables to achieve a better result, and also reflect the different services performances of each tour. Hence, this study argues that fuzzy logic, thinking, and FDAHP results are better than traditional statistical methods.

Tours are playing an important role in tour system for small and medium-sized travel agencies in developed Asian countries (Wang et al., 2017). Also, travel agencies should select tours carefully and sensitively due to creating security and providing direct services to tourists and monitoring the provided services by them.

According to the research results and the above discussion, this study not only investigates the determination of the factors influencing the quality of tours but provides a concrete model of the services quality importance to travel agencies and tours managers in order to improve the services operations. Finally, apart from establishing a clear set of criteria affecting the quality of services and providing a model for travel managers, research results have expanded our knowledge regarding the services quality in tours.

5.1 Limitations and future research

The exploratory nature of this study presents rich insights in the study areas and significant inferences. However, the results of this research only deal with establishing a set of evaluation criteria and the required model for travel agents, but without tours ranking and its impact on the model. Therefore, the researchers can have a good assessment of the influence of the factors on the provided services quality by ranking of tours and the effects of their ranks on the model. In addition, other multiple criteria decision techniques can be used in fuzzy environment for different evaluating of effective factors on the services quality of tours.

Finally, the recent trend suggests Iranian travel agencies and tours can improve Iran rate in attracting tourists and their satisfaction by using the results of these researches. This study shows that effective criteria on the quality of tours will become an important issue in Iran. Thus, the findings of this study can be recognized in tourism markets.

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