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Identifying and leveling the dimensions of supply chain in Iran`s religious tourism industry (by fuzzy Delphi method)

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Abstract
In this study, we were in search for identification and leveling the dimensions of supply chain in the Iranian religious tourism industry. In terms of purpose, this research is applicable, and in terms of implementation method is descriptive survey of correlation type. The participant team consists of 30 experts and university professors who had been selected by the purposeful method and the snowball sampling. By relatively extensive studies in the field of supply chain, we extracted the most significant factors in the religious tourism industry. Then, fuzzy Delphi method was used to identify the dimensions and parameters of supply chain in this industry. In the next step, the interpretive structural modeling was used for leveling the key factors. Data collections tools included interviews, documents and statistics, and questionnaires; the findings based on the data analysis showed ten main dimensions in the supply chain i.e. accommodation, transportation, visiting centers, reception centers,stores, environment and energy, travel agencies and tour operators, security and safety, economic management, information centers and communications that 3 dimensions reception centers,stores, and travel agencies and tour operators were in the first level; and 2 dimensions i.e. accommodation, and environment and energy were placed in second level; and visiting sites in third level; the economic management, information centers and communications in fourth level; accommodation in fifth level; finally the security and safety were put in sixth level.

Keywords: supply chain, religious tourism, fuzzy Delphi method, interpretive structural modeling.

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1. Introduction

Nowadays, tourism is one of the most significant and dynamic activities in the world, then the numbers of inside or foreign tourists and their income generating is progressively increasing in the globe (Ghadiri et al, 2016). On the other hand, most policy makers and planners in development field considered this industry as a clean industry (TaghaviFard et al, 2016)it has been mentioned as one of the ways for growth and economic development. Undoubtedly, this industry has recently had profound impact on economics, society, and culture including employment creation , the potency for bringing foreign currency, regional equality, preserving world peace, actively promoting investmentsin cultural heritage, improving the wildlife habitats, developing rural area with special touristattraction site and discourage emigration, etc. (Ghadiri et al, 2016).

There are different types of tourism: environmental tourism, historical sites tourism, health tourism[1], sports tourism, and electronic tourism[2]. Religious tourism is one of them too that can prevail against climatic conditions, and the numbers of tourists do not fluctuate dramatically by seasonal changes or adverse weather.For this kind of tourists, the destination is not important merely. Their experience begins at the very beginning of departure point and encompasses all the paths and events they encounter along the way. Religious tourism plays a prominent role in the social life of Islamic countries. In addition to economic and financial aspects-it causes more connections with other Islamic societies, andcreates direct interactions between nations and cultures that have something in common (Feyzabadi & Vaziri Mahboob, 2011).

Countries with special tourist attractions in terms of natural, cultural charms, ancient civilization, classical antiquities and the ruins and, religious site or holy shrine have additional capacity to attract tourists, and then worthwhile investment in this industry can be profitable billion dollars annually; hence, the tourism industry in many countries

[1]Health tourism is a wider term for travel that focuses on medical treatments and the use of healthcare services.

[2]Electronic tourism or e-tourism is part of electronic trade which encompasses the fastest developing technologies, such as communication and information industry, hospitality and management/marketing of strategic planning industry.

of the world is considered as a source of sustainable income which in addition to its positive effect on the countries' economies, and eventually it can be a significant factor in employment creation and eradication of poverty in deprived area.The importance of this industry and its discernable effect on economic, social and cultural developmenthave forced local, regional, and government authorities and officials around the world to attempt to expand it. In terms of national or regional capacity, Iran is also one of the most potentially attractive countries that have various tourist attractions that can be considered as the tourism hubs. In terms of the number and variety of historical, cultural, religious monuments and many natural attractions, this country shines like a jewel in the world. It also has the capacity to attract many tourists due to its religious sites and the antiquity of relics from the past, and the beautiful natural landscapes too. For this reason, due to the special religious and cultural status of the country among others, religious tourism has a lot of room for improvement and development. Unfortunately, Iran's religious tourism centers have been not organized specialized way, and the lack of proper planning is a great opportunity for identifying and leveling the dimensions and parameters of the supply chain in this industry.So, in this paper we attempt to answer this question: What are the identification and leveling of supply chain dimensions in Iran's religious tourism industry (using fuzzy Delphi method)?

2. Theoretical basis and research background

The term "supply chain management" was first coined by researchers Oliver and Weber in 1982 and then widely used in the 1990s (Lisa et al, 2019). The use of supply chain management in tourism has received more attention in the recent years.Supply chain is a wide range of participants in both private and public sectors in the form of a network of tourism organizations that offer wide variety of products or services such as flights and accommodation to distribute and marketing in a specific tourism destination (Zhang et al, 2016).

A tourism supply chain as a system emphasizes strongly not only the distribution of tourism`s products and services but also competitive and cooperative items between firms in the system. According to Tipper and Font, a tourism supply chain includes all providers who

offer their commodities and services as tourism`s products to the final consumer [tourists] (Juan et al, 2019).

The development of religious tourism has had a significant effect on the quality of life and the economic factor has greatly affected. Also, tourism had positive effects on different dimensions of quality of life such as employment and income and quality of housing and had negative impacts on health and environmental dimensions and quality of health. Also, those who work in the field of tourism seem to have fairly happier lives.Tourism has a profound effect on family life, social life, leisure time, cultural life in relation to others (David et al, 2019).

Tavakoli (2019) showed that religious tourism to be considered seriously. These are material, spiritual and cultural opportunities that facilitate the development of religious tourism and attract tourists to any country. Therefore, properly policy-making and planning in this area is incredibly important. Religious tourism flourishing between Islamic societies and travelling of Muslim tourists in the other Islamic countries will bring Muslim nations closer together and will lead to recognizing the problems and cultural characteristics of other Muslimcountries and then finding commonalities and differences between cultures to conform them. This will be a valuable help in achieving a common Islamic culture, and promoting unity among Muslims and reviving concept of a single Islamic nation.

Yousefi (2016) conducted a case studyon the function of religious tourism services in Birjand and the results showed that the quality of tourism services and gaining comparative advantages firstly requires carefully planning for providing infrastructures and valuable products and services to ensure comfort for tourists and the host society.So, the level of function in destination will be improved and the tourists' satisfaction and loyalty to the destination and to the services will be retained, and then relevant businesses will burgeon. Finally, the conditions for tourism development in the region will be provided.

Firooz Janian et al (2014) delivered a scholarly paper entitled `functional analysis of religious tourism` in Iran and concluded that in the subsystemreligious tourism will improve the basic tourism infrastructure in the region, creates employment, increases incomes and economic improvement of the host cities.

Mohammadi Yeganeh et al (2013) carried out a study `the role of religious tourism in rural development` with emphasis on quality of life and social capital in Qepchaq village[1]. The results implied that religious tourism in economic, structural, social and environmental dimensions just only in the structuralone has improved the quality of life in the village.

Lashkari and Alaeddini (2012) worked on a study entitled "evaluation of services in e-tourism in Iran" and their findings show that tourism websites have not yet entered the stage of user interaction. These websites, even in giving correct information are scarcely capable to meet basic demand of Iranian users.

Ebrahimzadeh et al (2011) delivered a paper entitled ` tourism strategic development planning with emphasis on religious tourism in Qom, Iran. In order to achieve the goals of research and development of tourism, development of Islamic sciences, increasing advertising and attracting foreign religious students and religious cultural touristswith introducing the real position of religious and cultural functions of Qom to other countries on the one hand, and creating employment and sustainable income on the other hand are suggested.

Taghvaei et al (2010) have worked on a paper entitled `analysis the development of religious tourism in Mamasani`[2] and emphasized the importance of religious places in attracting tourists and showed that religious places play a significant role in attracting tourists and developing the region.

Houti (2019) has conducted a study entitled `exploitation of religious tourism in Tiwa Ti Yong Province, Vietnam. Data analysis showed that the potential of spiritual tourism can be created through spiritual values, including royal value, ethnical cultural value, religious value, and historical value based on the historical heritage of relics from the past. Also, he highlighted the current problems of spiritual tourism development in the region. The findings of this study will be both a guide for practitioners and a comprehensivereference for researchers in field of development of the spiritual tourism.

Farooq and Anita (2018) worked on a paper entitled `the economic effects of spiritual tourism in India and Pakistan. Findings of this

[1] Located in the West Azerbaijan Province near to Miandoab city in Iran
[2] A city in Fars province in Iran

research indicate five economic factors with respect to spiritual tourism as a tourism innovation.

Farooq (2017) in a research `Islamic spiritual tourism: an innovative marketing framework`suggested that tourism marketers could focus on this niche market of Muslim spiritual tourists to design their innovative marketing strategies. An empirical study of attitudes and behavior of Muslims engaged in Islamic spiritual tourism is a palpable future research direction.

Li et al. (2015) did a research on `designing a model for tourism supply chain`. They showed that interdependence is the strongest effect of the previous variables, and coordinating the medical tourism supply chain and supply chain information sharing has a direct impact on organizational performance.

Izmailov et al. (2014) worked on a paper `religious tourism as a sociocultural phenomenon of the present`. They argued in the conditions of expansion of innovative trends in the domestic economy of tourism, in the near future it will be able to enter the international market with its unique religious tourist products.

3. Research methodology

The aim of this paper is identification and leveling the dimensions of supply chain in the Iranian religious tourism industry. In terms of purpose, this research is applicable, and in terms of implementation is descriptive survey of correlation type. The participant team consists of 30 experts and university professors who have been selected by the purposeful method and the snowball sampling. In the first step, after extracting ysignificant factors from pervious papers in this field for identifyingdimensions of supply chain in religious tourism, semi-open interviews with relevant experts were conducted through the fuzzy Delphi method.Then, the researcher went to the experts' workplace and provided the interviewee with a list of factors extracted from previous papers to add their proposed factors to it which was completed in three sessions.In the next step, the interpretive structural modeling was used for leveling. The findings based on the data analysis showed ten main dimensions in supply chain: accommodation, transportation, visiting centers, reception centers,stores, environment and energy, travel agencies and tour operators, security and safety, economic management, information

centers and communications that three dimensions reception centers,stores, and travel agencies and tour operators were in the first level; 2 dimensions accommodation, and environment and energy were placed in second level; visiting sites in third level; the economic management, information centers and communicationsin fourth level; accommodation in fifth level; and finally the security and safety were put in sixth level.

3.1. Fuzzy Delphi method

Delphi method was first proposed by Norman Dalkey and Olaf Helmer in 1959.This technique is a survey method based on the opinions of experts and has three main characteristics which are: anonymous response, repetition and controlled feedback, and finally statistical group responses.This technique is a systematic method to gather and coordinate the informed judgments of experts on a particular question or topic. It is not easy in many real situations to express and interpret expert judgments as definite quantitative numbers.In other words, data and definite numbers are insufficient to model real-world systems due to the ambiguity and uncertainty in the judgment of decision makers.In this regard, in order to overcome this issue, which was proposed by Lotfi Aliasker Zadeh in 1965, "fuzzy set theory" is a good tool to deal with the ambiguity and uncertainty in the decision-making process. Therefore, in this paper fuzzy Delphi method has been used to confirm and screen the identified parameters.
Since in Delphi method the predictions presented by experts are expressed in the form of definite numbers, it takes it away from the real world. Also, experts use their mental abilities for prediction, then indicating that the uncertainty surrounding the situation is based possibility, not probability.The possibility based of uncertainty is compatible with fuzzy sets.This method is a combination of the Delphi method and fuzzy set theory proposed by Ishikawa et al.

3.1.1. The steps of the fuzzy Delphi method are:

1- Identifying key factors using a comprehensive review of theoretical basis of research

2- Collecting the opinions of decision-making experts: In this step, after identifying the criteria of the religious tourism supply chain, a decision-making group of experts related to the research topic has formed, and the questionnaires for determining the relevance of the

identified parameters to the main research topic and screening was sent in which language variables were used to express the importance of each factor. In this research triangular fuzzy numbers have been used.

3- Verification and screening the parameters: This is done by comparing amount of the acquired value of each factor with the threshold value. The threshold value is calculated in several ways of which the value of 0.7 is basically considered as the threshold value. To do this, first the triangular fuzzy values of the experts 'opinions must be calculated, and then for calculating the average of the N respondents' opinions, the fuzzy average must be calculated. The fuzzy number is calculated for each of the parameters using the following equations.

Note: In many studies, the threshold value is also calculated from the average of the total fuzzy numbers.

$$\tilde{a}_{ij} = (a_{ij}, b_{ij}, c_{ij}), \quad i = 1,2,\dots,n \quad j = 1,2,\dots,m$$ رابطه ۱

$$a_j = \min(a_{ij})$$ رابطه ۲

$$b_j = \left(\prod_{i=1}^{n} b_{ij}\right)^{1/n}$$ رابطه ۳

$$c_j = \max(c_{ij})$$ رابطه ۴

In the above equations, index i refers to the expert and index j refers to the decision-making index. Also, the decomposed fuzzy value [de-fuzzy] of the average fuzzy number is calculated from the following equation:

$$Crisp = \frac{a+b+c}{3}$$ رابطه ۵

4-Consensus stage and completion of fuzzy Delphi: Consensus means that the respondents have reached a general decision about the factors,

and the step after which nothing special happens in the criteria (Hafeznia, 2014).

3.2. Interpretive structural modeling

For the second step of this paper the interpretive structural modeling method has been used. This method is an interactive learning process in which a set of different and interrelated elements are structured in a comprehensive systematic model.This method helps to create and direct complex relationships between the elements of a system. One of the main logics of this method is that the elements that have a greater impact on other elements in a system are always more important.The model obtained using this methodology shows the structure of a complex problem, a system or field of study that has a carefully designed model.In other words, interpretive structural modeling is an interactive process in which a set of different and related elements are structured in a comprehensive systematic model.Other advantages of this method include easy understanding for different users in interdisciplinary groups, integration of different perceptions, the ability to manage high interrelation of variables in complex systems and provide a comprehensive view of it.In this method, first the effective and basic factors are identified and then the relationships between these factors and the way to achieve through progress by these factors are presented.The model enables us to determine the relationship between parameters that are related to each other individually or in a group. This method analyzes the relationship between indexes by analyzing the criteria at several different levels (Khaki et al., 2017).

4. Findings

Firstly, after completing the questionnaires by the experts, the results based on fuzzy Delphi methodwere evaluated.So, the qualitative values of the variables were converted into fuzzy quantitative values and the mean fuzzy for each criterion was determined respectively. To do fuzzy the verbal variables, we used the Table (1) values:

Table 1: converting the verbal variables to triangular fuzzy numbers

Verbal variables	Triangular fuzzy numbers
fully agree	(۰/۹ ، ۱ ، ۱)
agree	(۰/۷ ، ۰/۹ ، ۱)
no comment	(۰/۳ ، ۰/۵ ، ۰/۷)
disagree	(۰، ۰/۱ ، ۰/۳)
Fullydisagree	(۰، ۰ ، ۰/۱)

Table 2: Mean fuzzy of the experts' opinion in the first step of the questioning and the decomposed fuzzy values

no.	**Parameters**	**The medium is de-fuzzy**	**Fuzzy medium**
۱	duration of accommodation	۰/۹۱	(۰/۷ ،۰/۹٦ ،۱)
۲	pilgrims' accommodation information	۰/۸۰	(۰/۳ ،۰/۹٥ ،۱)
۳	accommodation method	۰/۷۸	(۰/۳ ،۰/۹۱ ،۱)
٤	rate of hotel use	۰/۹۰	(۰/۷ ،۰/۹٥ ،۱)
٥	number of available beds	۰/۷٤	(۰/۳ ،۰/۸۳ ،۱)
٦	occupancy rate	۰/۹۰	(۰/۷ ،۰/۹٥ ،۱)
۷	number of people working in accommodation centers	۰/٦۹	(۰/۰ ،۰/۸۷ ،۱)
۸	average cost of accommodation	۰/۷۷	(۰/۳ ،۰/۸۹ ،۱)
۹	advertisement rate	۰/٦٦	(۰/۰ ،۰/۸۳ ،۱)
۱۰	the amount of facilities in accommodation centers	۰/٦۷	(۰/۰ ،۰/۸٤ ،۱)
۱۱	compliance with standards	۰/۷٥	(۰/۳ ،۰/۸٦ ،۱)
۱۲	average price per night	۰/۷۸	(۰/۳ ،۰/۹۰ ،۱)
۱۳	the number of proportional manpower in accommodation centers	۰/۷۷	(۰/۳ ،۰/۸۹ ،۱)
۱٤	share of transportation vehicle for suburban trips	۰/۷۹	(۰/۳ ،۰/۹۲ ،۱)
۱٥	share of transportation vehicle for inter-city trips	۰/۹۰	(۰/۷ ،۰/۹٥ ،۱)
۱٦	rate of suburban trips	۰/۷۹	(۰/۳ ،۰/۹۳ ،۱)
۱۷	rate of inter-city trips	۰/۷٦	(۰/۳ ،۰/۸۸ ،۱)
۱۸	pilgrim'stransportation costs	۰/۷۹	(۰/۳ ،۰/۹٤ ،۱)
۱۹	evaluation the performance of the transportation system	۰/۷۸	(۰/۳ ،۰/۹۲ ،۱)
۲۰	rate of the lines and roads' development	۰/۷۹	(۰/۳ ،۰/۹٤ ،۱)
۲۱	parking facilities	۰/۷۸	(۰/۳ ،۰/۹۲ ،۱)
۲۲	stations and terminals	۰/٦٥	(۰/۰ ،۰/۸۱ ،۱)
۲۳	level of transportation network's service	۰/۷۹	(۰/۳ ،۰/۹۲ ،۱)
۲٤	maximum capacity of suburban trippers	۰/۷۰	(۰/۰ ،۰/۹۰ ،۱)

٢٥	average ticket prices	٠/٧٩	(٠/٣ ،٠٠/٩٢ ،١)
٢٦	number or ratio of visiting centers	٠/٧٦	(٠/٣ ،٠٠/٨٧ ،١)
٢٧	total number of pilgrims	٠/٩٠	(٠/٧ ،٠٠/٩٧ ،١)
٢٨	average duration of pilgrims' attendance	٠/٧٨	(٠/٣ ،٠٠/٩١ ،١)
٢٩	average age of pilgrims	٠/٦٧	(٠/٠ ،٠٠/٨٤ ،١)
٣٠	motivation for visiting the centers	٠/٧٥	(٠/٣ ،٠٠/٨٦ ،١)
٣١	access routeto the centers	٠/٧٨	(٠/٣ ،٠٠/٩٠ ،١)
٣٢	percentage of religious cultural usage of the entire city	٠/٧٧	(٠/٣ ،٠٠/٨٩ ،١)
٣٣	the proportional number of manpower for sustainable tourism management	٠/٧٩	(٠/٣ ،٠٠/٩٢ ،١)
٣٤	number of available human resources in the field of tourism	٠/٩٠	(٠/٧ ،٠٠/٩٥ ،١)
٣٥	entrance fee	٠/٧٩	(٠/٣ ،٠٠/٩٣ ،١)
٣٦	physical capacity of acceptance	٠/٧٨	(٠/٣ ،٠٠/٩١ ،١)
٣٧	actual acceptance capacity	٠/٧٩	(٠/٣ ،٠٠/٩٢ ،١)
٣٨	effective acceptance capacity	٠/٧٦	(٠/٣ ،٠٠/٨٨ ،١)
٣٩	the average costs of each pilgrim in every centers	٠/٩١	(٠/٧ ،٠٠/٩٦ ،١)
٤٠	number of reception center	٠/٨٠	(٠/٣ ،٠٠/٩٥ ،١)
٤١	average cost of buying souvenirs from the total cost of pilgrims	٠/٧٨	(٠/٣ ،٠٠/٩١ ،١)
٤٢	ratio of visiting theshopping centers	٠/٩٠	(٠/٧ ،٠٠/٩٥ ،١)
٤٣	the amount of purchaseditems	٠/٧٤	(٠/٣ ،٠٠/٨٣ ،١)
٤٤	numbers of currency exchange offices or related facilities	٠/٩٠	(٠/٧ ،٠٠/٩٥ ،١)
٤٥	numbers of financial centers	٠/٦٩	(٠/٠ ،٠٠/٨٧ ،١)
٤٦	advertisement rate for financial centers	٠/٧٧	(٠/٣ ،٠٠/٨٩ ،١)
٤٧	numbers of shopping stores in airports and terminals relative to the centers	٠/٦٦	(٠/٠ ،٠٠/٨٣ ،١)
٤٨	shopping centers and financial centers in relation to the total area of the city	٠/٦٧	(٠/٠ ،٠٠/٨٤ ،١)
٤٩	amount of water consumed	٠/٧٥	(٠/٣ ،٠٠/٨٦ ،١)
٥٠	amount of sewage	٠/٩١	(٠/٧ ،٠٠/٩٦ ،١)
٥١	amount of wastewater treatment	٠/٨٠	(٠/٣ ،٠٠/٩٥ ،١)
٥٢	energy consumption per capita	٠/٧٨	(٠/٣ ،٠٠/٩١ ،١)
٥٣	limiting factors	٠/٩٠	(٠/٧ ،٠٠/٩٥ ،١)
٥٤	air pollutants	٠/٧٤	(٠/٣ ،٠٠/٨٣ ،١)
٥٥	climate change	٠/٩٠	(٠/٧ ،٠٠/٩٥ ،١)
٥٦	solid waste management	٠/٦٩	(٠/٠ ،٠٠/٨٧ ،١)
٥٧	sewage collection system	٠/٧٧	(٠/٣ ،٠٠/٨٩ ،١)
٥٨	water management	٠/٦٦	(٠/٠ ،٠٠/٨٣ ،١)
٥٩	energy consumption management	٠/٦٧	(٠/٠ ،٠٠/٨٤ ،١)
٦٠	the species and landscapes management	٠/٧٥	(٠/٣ ،٠٠/٨٦ ،١)
٦١	sound and lighting management	٠/٧٨	(٠/٣ ،٠٠/٩٠ ،١)
٦٢	amount of registered complaints from tours	٠/٧٧	(٠/٣ ،٠٠/٨٩ ،١)
٦٣	total cost of pilgrimage	٠/٧٩	(٠/٣ ،٠٠/٩٢ ،١)

٦٤	percentage of travel management	٠/٩٠	(٠/٧ ،٠/٩٥ ،١)
٦٥	percentage of booking services	٠/٧٩	(٠/٣ ،٠/٩٣ ،١)
٦٦	ratio of tour services' usage	٠/٧٦	(٠/٣ ،٠/٨٨ ،١)
٦٧	number of active travel agencies and tour operators	٠/٧٩	(٠/٣ ،٠/٩٤ ،١)
٦٨	number of travel service agencies in abroad	٠/٧٨	(٠/٣ ،٠/٩٢ ،١)
٦٩	average cost for visa application	٠/٧٩	(٠/٣ ،٠/٩٤ ،١)
٧٠	the average time required to apply for a visa	٠/٧٨	(٠/٣ ،٠/٩٢ ،١)
٧١	numbers of registered complaints	٠/٦٥	(٠/٠ ،٠/٨١ ،١)
٧٢	numbers of registered crimes	٠/٧٩	(٠/٣ ،٠/٩٢ ،١)
٧٣	numbers of registered fires	٠/٧٠	(٠/٠ ،٠/٩٠ ،١)
٧٤	numbers of road accidents	٠/٧٩	(٠/٣ ،٠/٩٢ ،١)
٧٥	the amount of enforcement the safety standards	٠/٧٦	(٠/٣ ،٠/٨٧ ،١)
٧٦	number of fire stations	٠/٩٠	(٠/٧ ،٠/٩٧ ،١)
٧٧	number of police stations	٠/٧٨	(٠/٣ ،٠/٩١ ،١)
٧٨	average time to investigate the possible complaints	٠/٦٧	(٠/٠ ،٠/٨٤ ،١)
٧٩	amount of tourism capacity	٠/٧٥	(٠/٣ ،٠/٨٦ ،١)
٨٠	total cost of pilgrims	٠/٧٨	(٠/٣ ،٠/٩٠ ،١)
٨١	amount of taxes and toll roads	٠/٧٧	(٠/٣ ،٠/٨٩ ،١)
٨٢	amount of customs revenues	٠/٧٩	(٠/٣ ،٠/٩٢ ،١)
٨٣	total income from applying a visa	٠/٩٠	(٠/٧ ،٠/٩٥ ،١)
٨٤	amount of investments in the field of tourism	٠/٧٩	(٠/٣ ،٠/٩٣ ،١)
٨٥	added value from tourism related industries	٠/٧٨	(٠/٣ ،٠/٩١ ،١)
٨٦	pilgrims' share of urban management costs	٠/٧٩	(٠/٣ ،٠/٩٢ ،١)
٨٧	the extent of social and cultural effects	٠/٧٦	(٠/٣ ،٠/٨٨ ،١)
٨٨	numbers of visits to the tourism related sites	٠/٩١	(٠/٧ ،٠/٩٦ ،١)
٨٩	percentage of information resources	٠/٨٠	(٠/٣ ،٠/٩٥ ،١)
٩٠	numbers and variety of information centers	٠/٧٨	(٠/٣ ،٠/٩١ ،١)
٩١	amount of communication facilities	٠/٩٠	(٠/٧ ،٠/٩٥ ،١)

According to the Table 2, the expert group agreed with the parameters, and the definite average of the criteria is all above 0.4. In the second, in addition to the information related to the average opinions of all experts were questioned the previous opinion of each of them andthen recorded.After comparing them, their new views on the effective parameters in supply chain in the religious tourism industry were registered again. Also, in the second questionnaire we put seven new effective parameters in supply chain as follows:

1- Identify religious sites with legal documents
2- Introducing religious sites through cyberspace
3- Pathology of the religious tourism industry in a specialized way
4- Employing specialized and active people in tourism industry
5- Support of government organizations
6- Eliminate customs duties to further encourage the religious tourism industry
7- Training and development of human resources

Table 3: Mean difference between the decomposed fuzzy of the second and third steps

no.	**Parameters**	**mean decomposed fuzzy step 2**	**mean decomposed fuzzy step 3**	**difference**
١	duration of accommodation	٠/٩٠	٠/٩١	٠/٠١
٢	pilgrims' accommodation information	٠/٩١	٠/٩١	٠/٠٠
٣	accommodation method	٠/٧٩	٠/٧٨	٠/٠١
٤	rate of hotel use	٠/٨٥	٠/٩٠	٠/٠٥
٥	number of available beds	٠/٧٥	٠/٧٦	٠/٠١
٦	occupancy rate	٠/٩٠	٠/٨٣	٠/٠٧
٧	number of people working in accommodation centers	٠/٧٨	٠/٧٩	٠/٠١
٨	average cost of accommodation	٠/٨٩	٠/٩٠	٠/٠١
٩	advertisement rate	٠/٧٨	٠/٧٨	٠/٠٠
١٠	the amount of facilities in accommodation centers	٠/٧٧	٠/٧٨	٠/٠١
١١	compliance with standards	٠/٧٦	٠/٧٧	٠/٠١
١٢	average price per night	٠/٨٦	٠/٨٩	٠/٠٣
١٣	the number of proportional manpower in accommodation centers	٠/٨٢	٠/٩٠	٠/٠٨
١٤	share of transportation vehicle for suburban trips	٠/٩٠	٠/٩٠	٠/٠٠
١٥	share of transportation vehicle for inter-city trips	٠/٩٠	٠/٩٠	٠/٠٠
١٦	rate of suburban trips	٠/٩١	٠/٩١	٠/٠٠
١٧	rate of inter-city trips	٠/٩٠	٠/٩٠	٠/٠٠
١٨	pilgrim'stransportation costs	٠/٩٠	٠/٨٩	٠/٠١

١٩	evaluation the performance of the transportation system	٠/٨٩	٠/٨٩	٠/٠٠
٢٠	rate of the lines and roads' development	٠/٩١	٠/٩١	٠/٠٠
٢١	parking facilities	٠/٨٥	٠/٩٠	٠/٠٥
٢٢	stations and terminals	٠/٩١	٠/٩١	٠/٠٠
٢٣	level of transportation network's service	٠/٨٩	٠/٨٩	٠/٠٠
٢٤	maximum capacity of suburban trippers	٠/٧٥	٠/٧٦	٠/٠١
٢٥	average ticket prices	٠/٩٠	٠/٨٩	٠/٠١
٢٦	number or ratio of visiting centers	٠/٧٦	٠/٧٧	٠/٠١
٢٧	total number of pilgrims	٠/٧٨	٠/٨٠	٠/٠٢
٢٨	average duration of pilgrims' attendance	٠/٧٥	٠/٧٦	٠/٠١
٢٩	average age of pilgrims	٠/٧٦	٠/٧٧	٠/٠١
٣٠	motivation for visiting the centers	٠/٧٩	٠/٨٠	٠/٠١
٣١	access routeto the centers	٠/٨٧	٠/٩١	٠/٠٤
٣٢	percentage of religious cultural usage of the entire city	٠/٩١	٠/٨٧	٠/٠٤
٣٣	the proportional number of manpower for sustainable tourism management	٠/٧٩	٠/٨٤	٠/٠٥
٣٤	number of available human resources in the field of tourism	٠/٩١	٠/٩١	٠/٠٠
٣٥	entrance fee	٠/٩٠	٠/٨٤	٠/٠٦
٣٦	physical capacity of acceptance	٠/٩١	٠/٨٦	٠/٠٥
٣٧	actual acceptance capacity	٠/٧٧	٠/٧٧	٠/٠٠
٣٨	effective acceptance capacity	٠/٧٨	٠/٧٩	٠/٠١
٣٩	the average costs of each pilgrim in every centers	٠/٧٩	٠/٨٧	٠/٠٢
٤٠	number of reception center	٠/٧٩	٠/٧٩	٠/٠٠
٤١	average cost of buying souvenirs from the total cost of pilgrims	٠/٩٠	٠/٨٩	٠/٠١
٤٢	ratio of visiting theshopping centers	٠/٧٧	٠/٧٨	٠/٠١
٤٣	the amount of purchaseditems	٠/٨٩	٠/٨٩	٠/٠٠
٤٤	numbers of currency exchange offices or related facilities	٠/٧٨	٠/٧٩	٠/٠١
٤٥	numbers of financial centers	٠/٩٠	٠/٩٠	٠/٠٠
٤٦	advertisement rate for financial centers	٠/٨٩	٠/٨٩	٠/٠٠
٤٧	numbers of shopping stores in airports and terminals relative to the centers	٠/٨٩	٠/٨٠	٠/٠٩
٤٨	shopping centers and financial centers in relation to the total area of the city	٠/٧٨	٠/٧٨	٠/٠٠
٤٩	amount of water consumed	٠/٩٠	٠/٩٠	٠/٠٠
٥٠	amount of sewage	٠/٧٧	٠/٧٨	٠/٠١
٥١	amount of wastewater treatment	٠/٨٧	٠/٧٩	٠/٠٨
٥٢	energy consumption per capita	٠/٩١	٠/٩١	٠/٠٠
٥٣	limiting factors	٠/٨٣	٠/٩٠	٠/٠٧
٥٤	air pollutants	٠/٧٩	٠/٧٨	٠/٠١
٥٥	climate change	٠/٩١	٠/٩١	٠/٠٠
٥٦	solid waste management	٠/٩١	٠/٩١	٠/٠٠
٥٧	sewage collection system	٠/٨٩	٠/٨٩	٠/٠٠

٥٨	water management	٠/٨٠	٠/٧٩	٠/٠١
٥٩	energy consumption management	٠/٨٥	٠/٧٧	٠/٠٨
٦٠	the species and landscapes management	٠/٩١	٠/٨٩	٠/٠٢
٦١	sound and lighting management	٠/٨٨	٠/٩٠	٠/٠٢
٦٢	amount of registered complaints from tours	٠/٨٥	٠/٩٠	٠/٠٥
٦٣	total cost of pilgrimage	٠/٨١	٠/٩٠	٠/٠٩
٦٤	percentage of travel management	٠/٩٠	٠/٩١	٠/٠١
٦٥	percentage of booking services	٠/٨٧	٠/٩٠	٠/٠٣
٦٦	ratio of tour services' usage	٠/٨٩	٠/٨٩	٠/٠٠
٦٧	number of active travel agencies and tour operators	٠/٨٠	٠/٨٩	٠/٠٩
٦٨	number of travel service agencies in abroad	٠/٨٧	٠/٩١	٠/٠٤
٦٩	average cost for visa application	٠/٨٤	٠/٩٠	٠/٠٦
٧٠	the average time required to apply for a visa	٠/٨٦	٠/٩١	٠/٠٥
٧١	numbers of registered complaints	٠/٨٢	٠/٨٩	٠/٠٧
٧٢	numbers of registered crimes	٠/٨٤	٠/٧٦	٠/٠٨
٧٣	numbers of registered fires	٠/٩٠	٠/٨٩	٠/٠١
٧٤	numbers of road accidents	٠/٨١	٠/٧٧	٠/٠٤
٧٥	the amount of enforcement the safety standards	٠/٨٥	٠/٨٠	٠/٠٥
٧٦	number of fire stations	٠/٨٢	٠/٧٦	٠/٠٦
٧٧	number of police stations	٠/٨٥	٠/٧٧	٠/٠٨
٧٨	average time to investigate the possible complaints	٠/٨١	٠/٨٠	٠/٠١
٧٩	amount of tourism capacity	٠/٨٥	٠/٩١	٠/٠٦
٨٠	total cost of pilgrims	٠/٩١	٠/٨٧	٠/٠٤
٨١	amount of taxes and toll roads	٠/٨٩	٠/٨٤	/٠٥
٨٢	amount of customs revenues	٠/٨٥	٠/٩١	٠/٠٦
٨٣	total income from applying a visa	٠/٨٨	٠/٨٤	٠/٠٤
٨٤	amount of investments in the field of tourism	٠/٧٧	٠/٨٦	٠/٠٩
٨٥	added value from tourism related industries	٠/٧٨	٠/٧٧	٠/٠١
٨٦	pilgrims' share of urban management costs	٠/٧٥	٠/٧٩	٠/٠٤
٨٧	the extent of social and cultural effects	٠/٧٩	٠/٨٧	٠/٠٨
٨٨	numbers of visits to the tourism related sites	٠/٧٩	٠/٧٩	٠/٠٠
٨٩	percentage of information resources	٠/٨٧	٠/٨٩	٠/٠٢
٩٠	numbers and variety of information centers	٠/٨١	٠/٧٨	٠/٠٣
٩١	amount of communication facilities	٠/٨٣	٠/٨٩	٠/٠٦
٩٢	identify religious sites with legal documents	٠/٨١	٠/٧٩	٠/٠٢
٩٣	introducing religious sites through cyberspace	٠/٩٠	٠/٩٠	٠/٠٠
٩٤	pathology of the religious tourism industry in a specialized way	٠/٩١	٠/٨٩	٠/٠٢
٩٥	employing specialized and active people in tourism industry	٠/٧٧	٠/٨٠	٠/٠٣
٩٦	support of government organizations	٠/٧٨	٠/٧٨	٠/٠٠
٩٧	eliminate customs duties to further encourage the religious tourism industry	٠/٨٩	٠/٩٠	٠/٠١
٩٨	training and development of human resources	٠/٧٩	٠/٧٨	٠/٠١

According to the views presented in the third step and its comparison with the results of the second step, the difference between the definite mean factors between the two steps is less than the low threshold 0.1; so, the questioning process is stopped, and the expert group members agreed with all the factors and these factors were accepted based on fuzzy Delphi method.

Table 6: dimensions of supply chain in religious tourism

Dimension	Parameters
accommodation	duration of accommodation
	pilgrims' accommodation information
	accommodation method
	rate of hotel use
	number of available beds
	occupancy rate
	number of people working in accommodation centers
	average cost of accommodation
	advertisement rate
	the amount of facilities in accommodation centers
	compliance with standards
	average price per night
	the number of proportional manpower in accommodation centers
transportation	share of transportation vehicle for suburban trips
	share of transportation vehicle for inter-city trips
	rate of suburban trips
	rate of inter-city trips
	pilgrim'stransportation costs
	evaluation the performance of the transportation system
	rate of the lines and roads' development
	parking facilities
	stations and terminals
	level of transportation network's service
	maximum capacity of suburban trippers
	average ticket prices

visiting center	number or ratio of visiting centers
	total number of pilgrims
	average duration of pilgrims' attendance
	average age of pilgrims
	motivation for visiting the centers
	access routeto the centers
	percentage of religious cultural usage of the entire city
	the proportional number of manpower for sustainable tourism management
	number of available human resources in the field of tourism
	entrance fee
	physical capacity of acceptance
	actual acceptance capacity
	effective acceptance capacity
	the average costs of each pilgrim in every centers
reception centers	number of reception center
	average cost of buying souvenirs from the total cost of pilgrims
stores	ratio of visiting theshopping centers
	the amount of purchaseditems
	numbers of currency exchange offices or related facilities
	numbers of financial centers
	advertisement rate for financial centers
	numbers of shopping stores in airports and terminals relative to the centers
	shopping centers and financial centers in relation to the total area of the city
	amount of water consumed
environment and energy	amount of sewage
	amount of wastewater treatment
	energy consumption per capita
	limiting factors
	air pollutants
	climate change
	solid waste management
	sewage collection system

	water management
	energy consumption management
	the species and landscapes management
	sound and lighting management
	amount of registered complaints from tours
travel agencies and tour operators	total cost of pilgrimage
	percentage of travel management
	percentage of booking services
	ratio of tour services' usage
	number of active travel agencies and tour operators
	number of travel service agencies in abroad
	average cost for visa application
	the average time required to apply for a visa
	numbers of registered complaints
security and safety	numbers of registered crimes
	numbers of registered fires
	numbers of road accidents
	the amount of enforcement the safety standards
	number of fire stations
	number of police stations
	average time to investigate the possible complaints
	amount of tourism capacity
economic management	total cost of pilgrims
	amount of taxes and toll roads
	amount of customs revenues
	total income from applying a visa
	amount of investments in the field of tourism
	added value from tourism related industries
	pilgrims' share of urban management costs
	the extent of social and cultural effects
	duration of accommodation
	eliminate customs duties to further encourage the religious tourism industry
	introducing religious sites through cyberspace
	pathology of the religious tourism industry in a specialized way

	training and development of human resources
	employing specialized and active people in tourism industry
	support of government organizations
information centers	numbers of visits to the tourism related sites
	percentage of information resources
	numbers and variety of information centers
	amount of communication facilities

To identify the dimensions and parameters in these three steps fuzzy Delphi method based experts' opinions was used on which 10 main factors and 98 parameters were identified.

5. Interpretive structural modeling

5.1. Formation of the structural self-interaction matrix (SSIM)

Based on the results of the previous step, the next one is to identify the pattern of causal relationship between them. Experts' opinions have been used to reflect the internal relationships between the main criteria. In this method, the experts are able to argue plausibly their opinions on the impacts (direction and intensity of effects) between factors.The matrix shows both the causal relationship between the factors, and impacts and effectiveness of the variables too [impacted and affected relation]. At this step, the variables were compared in pairs and the participants used the symbols V, A, O, X to determine the relationships between them. After questioning the experts, the structural self-interaction matrix was formed according to Table (8).

Table 7: signs used in the structural-interpretive modeling

O	X	A	V
no relation	causal relations	variable j impacted on variable i	variable i impacted on variable j

Table 8: structural self-interaction matrix

no.	Variable	10	9	8	7	6	5	4	3	2	1
1	accommodation	A	X	X	X	O	V	X	A	O	1
2	transportation	O	X	A	X	V	X	X	X	1	
3	visiting sites	A	A	X	X	O	X	X	1		
4	reception centers	O	X	X	X	A	X	1			
5	stores	O	X	X	X	A	1				
6	environment and energy	O	O	O	X	1					
7	travel agencies and tour operators	A	X	X	1						
8	security and safety	X	X	1							
9	economic management	O	1								
10	information centers and communications	1									

5.2. Formation of the initial reachability matrix

In this step, our structural self-interaction matrix was converted into a binary matrix [i.e. one and zero]. By changing the symbols V, A, O, X to zero and one for each variable, the structural self-interaction matrix is transformed into a binary matrix as be called the initial reachability matrix. The rules for changing are as follows:If the entry (i, j) [intersection of row i and column j) is in structuralself-interactionmatrix V, then theentry (i, j) in the initial matrix is 1 and the entry (j, i) is zero.If the entry (i, j) is in structural self-interaction matrix A, then the entry (i, j) in the initial matrix is zero and the entry (j, i) is one. If the entry (i, j) is in structural interaction X, then theentry (i, j) in the initial matrix is one and the entry (j, i) is one.If the entry (i, j) is in structural self-interaction matrix O, then the entry (i, j) in the initial matrix is zero and the entry (j, i) is zero.According to the above, the initial reachability matrix for the structural self-interaction matrix in previous step is formed in Table (9).

Table 9: initial reachability matrix

no.	Variable	١	٢	٣	٤	٥	٦	٧	٨	٩	3
١	accommodation	١	٠	٠	١	١	٠	١	١	١	٠
٢	transportation	٠	١	١	١	١	١	١	٠	١	٠
٣	visiting sites	١	١	١	١	١	٠	١	١	٠	٠
٤	reception centers	١	١	١	١	١	٠	١	١	١	٠
٥	stores	٠	١	١	١	١	٠	١	١	١	٠
٦	environment and energy	٠	٠	٠	١	١	١	١	٠	٠	٠
٧	travel agencies and tour operators	١	١	١	١	١	١	١	١	١	٠
٨	security and safety	١	١	١	١	١	٠	١	١	١	١
٩	economic management	١	١	١	١	١	٠	١	١	١	٠
١٠	information centers and communications	١	٠	١	٠	٠	٠	١	١	٠	١

5.3. Formation of the final reachability matrix

After forming the initial reachability matrix by incorporating the transitivity concept in the relations of the variables, the final reachability matrix is formed. Now, secondary relations must be controlled to ensure; transitivity means that if variable A has impact on B and B has impact on C, then logically A might also hasimpact on C, i.e. if direct impacts should be considered based on the secondary relations but this has not happened in practice, the table should be corrected and the secondary relations should also be shown.In this matrix, the dominance of a variable is obtained bycollective numbers

of them affected and the variable itself. The dependency [dominant factors] of a variable is also obtained by collective numbers of them affected and the variable itself. The final reachability matrix is as follows Table (10):

Table 10: final reachability matrix

no.	Variable	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠	dominant factor
١	accommodation	١	٠	٠	١	١	٠	١	١	١	٠	٦
٢	transportation	٠	١	١	١	١	١	١	٠	١	٠	٧
٣	visiting sites	١	١	١	١	١	٠	١	١	٠	٠	٧
٤	reception centers	١	١	١	١	١	٠	١	١	١	٠	٨
٥	stores	٠	١	١	١	١	٠	١	١	١	٠	٧
٦	environment and energy	٠	٠	٠	١	١	١	١	٠	٠	٠	٤
٧	travel agencies and tour operators	١	١	١	١	١	١	١	١	١	٠	٩
٨	security and safety	١	١	١	١	١	٠	١	١	١	١	٩
٩	economic management	١	١	١	١	١	٠	١	١	١	٠	٨
١٠	information centers and communications	١	٠	١	٠	٠	٠	١	١	٠	١	٥
	dependency	٧	٧	٨	٩	٩	٣	١٠	٨	٧	٢	

5.4. Identifying the relations and level partitionof parameters [factors]

To determine the relations and leveling of criteria, a set of outputs and a set of entries for each criterion must be obtained from the previous matrix. The set of outputs includes the criterion itself and the criteria that affected it.The set of entries includes the criterionitself and the criteria that affected it. After identifying entries and outputs, the common points of them for each factor have been determined. So, a common set is reached for each factor. The factors whose outputs and common set are quite similar are at the highest level of the interpretive structural modeling hierarchy.In order to find the key factors of the next level in the system, its highest level factors are removed through the mathematical calculations of the relevant table, and calculations related to determining the next level factor are performed, like the method for determining the highest level parameters.This process is repeated until the parameters of all levels are determined. As depicted in Table 11, reception centers, stores, and travel agencies and tour operators are the top key three factors in the first level.When the highest level of factors is determined in the first iteration, these factors

should be separated from others, and this action is repeated until the level of all factors is determined.

Table 11: Determining the first level in the hierarchy of interpretive structural modeling

Factor	Outputs set (impact)	Entries set (affect)	Common point	Level
١	١،٤،٥،٧،٨،٩	١،٣،٤،٧،٨،٩،١٠	١،٤،٧،٨،٩	
٢	٢،٣،٤،٥،٦،٧،٩	٢،٣،٤،٥،٧،٨،٩	٢،٣،٤،٥،٧	
٣	١،٢،٣،٤،٥،٧،٨	٢،٣،٤،٥،٧،٨،٩،١٠	٢،٣،٤،٥،٧،٨	
٤	١،٢،٣،٤،٥،٧،٨،٩	١،٢،٣،٤،٥،٦،٧،٨،٩	١،٢،٣،٤،٥،٧،٨،٩	١
٥	٢،٣،٤،٥،٧،٨،٩	١،٢،٣،٤،٥،٦،٧،٨،٩	٢،٣،٤،٥،٧،٨،٩	١
٦	٤،٥،٦،٧	٢،٦،٧	٦،٧	
٧	١،٢،٣،٤،٥،٦،٧،٨،٩	١،٢،٣،٤،٥،٦،٧،٨،٩،١٠	١،٢،٣،٤،٥،٦،٧،٨،٩	١
٨	١،٢،٣،٤،٥،٧،٨،٩،١٠	١،٣،٤،٥،٧،٨،٩،١٠	١،٣،٤،٥،٧،٨،٩،١٠	
٩	١،٢،٣،٤،٥،٧،٨،٩	١،٢،٤،٥،٧،٨،٩	١،٢،٤،٥،٧،٨،٩	
١٠	١،٣،٧،٨،١٠	١٠، ٨	١٠، ٨	

Table 12: Determining the second level in the hierarchy of interpretive structural modeling

Factor	Outputsset (impact)	Entries set (affect)	Common point	Level
١	١،٨،٩	١،٣،٨،٩،١٠	١،٨،٩	٢
٢	٢،٣،٦،٩	٢،٣،٨،٩	٢،٣	
٣	١،٢،٣،٨	٢،٣،٨،٩،١٠	٢،٣،٨	
٦	٦	٢،٦	٦	٢
٨	١،٢،٣،٨،٩،١٠	١،٣،٨،٩،١٠	١،٣،٨،٩،١٠	
٩	١،٢،٣،٨،٩	١،٢،٨،٩	١،٢،٨،٩	
١٠	١،٣،٨،١٠	١٠، ٨	١٠، ٨	

Table 13: Determining the third level in the hierarchy of interpretive structural modeling

Factor	Outputsset (impact)	Entries set (affect)	Common point	Level
٢	٢،٣،٩	٢،٣،٨،٩	٢،٣	
٣	٢،٣،٨	٢،٣،٨،٩،١٠	٢،٣،٨	٣
٨	٢،٣،٨،٩،١٠	٣،٨،٩،١٠	٣،٨،٩،١٠	
٩	٢،٣،٨،٩	٢،٨،٩	٢،٨،٩	
١٠	٣،٨،١٠	١٠، ٨	١٠، ٨	

Table 14: Determining the fourth level in the hierarchy of interpretive structural modeling

Factor	Outputsset (impact)	Entries set (affect)	Common point	Level
٢	٢،٩	٢،٨،٩	٢	
٨	٢،٨،٩،١٠	٨،٩،١٠	٨،٩،١٠	
٩	٢،٨،٩	٢،٨،٩	٢،٨،٩	٤
١٠	٨،١٠	١٠، ٨	١٠، ٨	٤

Table 15: Determining the fifth level in the hierarchy of interpretive structural modeling

Factor	Outputsset (impact)	Entries set (affect)	Common point	Level
۲	۲	۲،۸	۲	۵
۸	۲،۸	۸	۸	

Table 16: Determining the sixth level in the hierarchy of interpretive structural modeling

Factor	Outputsset (impact)	Entries set (affect)	Common point	Level
۸	۸	۸	۸	٦

5.5. Drawing an interpretive structural model of the dimensions of the religious tourism supply chain

The final model obtained in this research consists of three levels.Factors that are at higher levels are less effective and are more affected by other factors.Lower level factors are more effective.

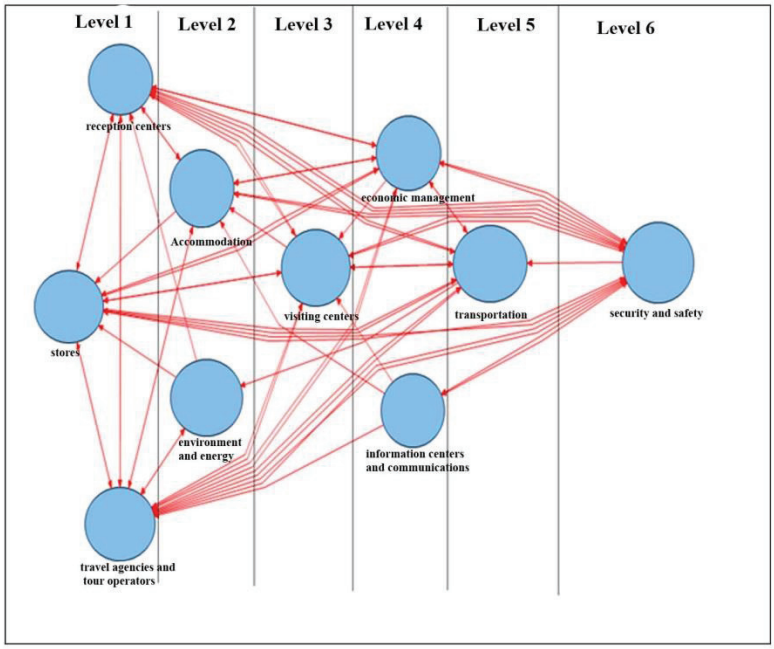

Figure 1: Interpretive structural model forthe dimensions of religious tourism supply chain

6. Analyzing of the determinacy and interdependence (MICMAC[1] analysis)

MICMAC analysis is one of the subjects of structural interpretive modeling; based on the power of interdependence and the determinacy of variables, a coordinate system can be defined and divided into four equal parts.MICMAC analysis is based on the determinacy power (impact) and the degree of interdependence (affection) of each variable, and allows further consideration on the influences of each variable.

The line sum of the values in the final reachability matrix for each factor indicates the degree of determinacy power [impact], and the column sum of the values indicates the degree of interdependence [affection]. Factors that are at lower levels of the model are considered as conductor due to having more driving power and factors that are at higher levels due to dependency on conductor factors are considered as followers.Further, the variables are plotted against their driving and dependency power into four clusters identified based on their locations depicted in Figure as follows:

1- Autonomous variables: these factors are weak driver and weak dependence variables, and are generally separated from the system because they have poor relations to it. A change in these variables does not cause a serious change in the system.

2- Dependence variables: these factors are strong dependence power variables that have low driving power. These variables generally have high affection and little impact on the system.

3- Linkage variables: Factors that are highly driving as well as strong dependent variables. In other word, both impact and affection of these factors are very high and any small change on these variables causes fundamental changes in the system.

4- Driving variables (independent): Factors that have weak dependence and very strong driving power; in other words, high impact and low affection are the characteristics of these variables.

In fact, this method is used to identify the degree of dependence and dominance power of factors in structural analysis.Therefore, the line [or row] sum of the numbers of relations (direct or indirect relations

[1]Cross-impact matrix multiplication applied to classification

identified for each factor) in final reachability matrix in table 17 indicates the degree of driving power [impact], and the column sum of the numbers of relations (direct or indirect relations) in the table indicates the degree of interdependence [affection] of that factor. These numbers for each factor were depicted separately in Figure 2.

Table 17: the number used to illustrate dominance-interdependency chart(MICMAC figure).

٠	١	٢	٣
no impact	low impact	limited impact	Considerable impact

Table 18: dominance and interdependence on dimensions of religious tourism supply chain

no.	Variable	١	٢	٣	٤	٥	٦	٧	٨	٩	١٠
١	accommodation	٠	٢	٢	٢	٢	١	٢	٣	٢	١
٢	transportation	٢	٠	٢	٢	٢	١	٢	٢	١	١
٣	visiting sites	٢	٢	٠	٢	٢	١	٢	٢	٢	١
٤	reception centers	٢	٢	٢	٠	٢	٢	٢	٢	٢	١
٥	stores	٢	٢	٢	١	٠	١	٢	٢	٢	١
٦	environment and energy	٢	٢	٢	٢	١	٠	٢	١	٢	١
٧	travel agencies and tour operators	٢	٣	٢	٢	٢	٢	٠	٢	٢	١
٨	security and safety	٢	٢	٢	٢	٢	١	٢	٠	٢	١
٩	economic management	٢	٢	٢	٢	٢	١	٢	١	٠	١
١٠	information centers and communications	١	٢	١	١	١	١	١	١	١	٠

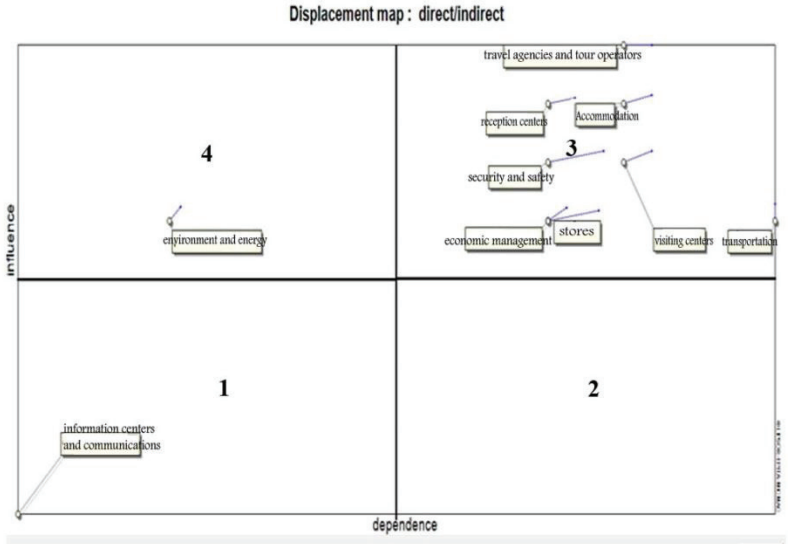

Figure 2: dominance-interdependency analysis (MICMAC figure) on dimensions of religious tourism supply chain

1-In the analysis, the variables according to their driving power and interdependencewere divided into four categories. The first category includes autonomous variables that have weak driver and weak dependency, and are relatively separated from the system because they have poor or low relations to it. In this paper, information centers and communications as variable were placed in this category.

2-In the second category, interdependent variables that are highly strong dependence power but low driving power. These factors that generally arethe highest interdependent andthe lowest driving power, there is no factor in the category, in the present paper.

3-Third level is linkage variables that have highly driving as well as strong interdependent power. They are non-static because any small change in themaffects dramatically the whole system.

4- **And as a result**, the related feedback can change these variables again. In present research, the factors i.e. accommodation, transportation, visiting centers, reception centers, stores, travel agencies and tour operators, security and safety, economic management fall into this level.

The last level included driving variables (or independent) that have highly strong driving power but weak interdependence; in other words, these factors act as the structural cornerstone of system, and to begin a profound change in performance, they must be emphasized rightly first. In the paper, the key factor environment and energy undoubtedly is in this category.

7. Discussion and conclusion

Today, tourism as one of the most important and influential sectors in the world economy is increasingly expanding. The tourism industry, as one of the top ten industries in the world, plays a substantial role in the economic cycle and is one of the most important sectors of income generation and bringing foreign currency. Nowadays, the highly competitive environment of this industry is forcing active companies in the field of religious tourism to look forward new ways to improve their comparative advantages; Tourism supply chain management is one of the strategies that can help them. It has been used appropriately in the manufacturing industry and the room for it seems to be quite empty and can be applied as a tool to integrate the nature of this industry.The tourism supply chain includes a range of activities from

the support of various tourism goods and services (such as aviation and accommodation services) to the distribution and marketing of the final tourism-specific product in a particular destination; as well as a wide range of participants in both the private and public sectors included.

In this paper, the dimensions and parameters of supply chain management in the religious tourism industry have been studied. After reviewing the related literature to the subject, dimensions and key factors were identified using the fuzzy Delphi method, and finally an interpretive structural model related was obtained. The prominent factors included accommodation, transportation, visiting centers, reception centers, stores, environment and energy, travel agencies and tour operators, security and safety, economic management, information centers and communications.

References

David Ross& et al.(2016).Participative co-creation of archaeological heritage: Case insights on creative tourism in Alentejo, Portugal,Annals of Tourism Research,Vol 79

Ebrahimzadeh, I. Kazemizad, Sh. Eskandari Thani, M. (2011). Strategic planning of tourism development, with emphasis on religious tourism (Case study: Qom), Human Geography Research, 43 (76): 115- 141.

Farooq , Haq & Anita, M.(2018). The Economic Effects of Spiritual Tourism in India and Pakistan. Urbanization and Its Impact on Socio-Economic Growth in Developing Regions. DOI: 10.4018/978-1-5225-2659-9.ch004

Feyzabadi, M & J. Vaziri Mahboob, S. .. (2011) The necessity of future studies, future research and its methods in tourism development. Miqat al-Reza Conference. Mashhad

Firoozjaeian, A. A. Yousefi, N. Mir Mohammad Taba, S. A. (2014). Functional analysis of religious tourism in Iran (meta-analysis of existing research), Tourism Planning and Development, 3 (8): 143-165.

Ghadiri, M. Hatamifar, P. Tabatabai, S. M. (2016). Evaluation of rural tourism supply chain in rural Egypt, Tourism Management Studies (Tourism Studies), 11 (35): 41-62.

Izmailov, D., Duissenbayeva, Sh., Kurmanaliyeva. (2014). Religious tourism as a sociocultural phenomenon of the present The unique sense today is a universal value tomorrow. This is the way religions are created and values are made.Procedia - Social and Behavioral Sciences, 958-963.

Juan IgnacioPulido,F & et al.(2019).Introducing olive-oil tourism as a special interest tourism,Heliyon,Vol 5, Issue 12.

Lashkari, N & Alaeddini, P. (2012). Evaluation of Internet Tourism Services in Iran: A Study of Eight Representative Websites, World Media Journal, 7 (2): 1-22.

Li, G., Song, H., and Witt, S.F. (2015),"Recent Developments in Econometric Modeling and Forecasting", Journal of Travel Research,44, pp. 82-99.

Lisa M. Ellram& et al.(2016).Supply chain management in industrial marketing–Relationships matter,Industrial Marketing Management,Vol 79, 36-45

Mohammadi, Y. Cheraghi, B , M & Valaei, M. (2013) .The role of religious tourism in rural development, with emphasis on quality of life and social capital Case study; Qapchaq village of Miandoab city. Applied Research in Geographical Sciences, 13 (30): 7-25.

Mottaghi, A. et al. (2016). Analysis of Iran's Geopolitical Opportunities and Challenges on Religious Tourism (Case Study: Mashhad), Geography Quarterly (Regional Planning), 10 (2): 1141-1161.

Rajabi, A. (2020). The role of cultural and religious attractions in tourism development (case study of Tuyserkan city), Tourism Space Quarterly, 9 (34): 63-76.

Taghvaei, M. Mousavi, S. A. Gholami Bimargh, Y. (2010) An Analysis of the Development of Religious Tourism (Case Study: Noorabad Mamasani), Geographical Space, 10 (31): 39-64.

Taqwa Fard, M & Zargham Borujeni ,T & Dear Azra, H. (2020), Analysis of themes affecting the value of creation through the provision of an integrated electronic chain of tourism services in Iran. Quarterly Journal of Tourism and Development

Tavakoli, H. (2019) Religious tourism, National Conference on Sustainable Development with the approach of investment opportunities and challenges in Tarshiz region.

Yousefi, J. (2016). Importance Analysis - Performance of Religious Tourism Services (Case Study of Birjand), Tourism Planning and Development, 7 (24): 38-58.