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Evaluation of Tourism Development Strategies with Emphasis on Religious Tourism in Karbala City

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Article Info	Abstract
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Keywords: Religious tourism Pilgrims' experience Tourism infrastructure Tourism development Karbala City	Karbala city is destination of millions of pilgrims from all over the world every year. Therefore, this research has assessed strategies for developing religious tourism in Karbala city, with an emphasis on improving the pilgrims' experience and exploiting the economic and social capacities of this city. First, indicators related to religious tourism infrastructure were identified, and then their impact on the pilgrims' experience was analyzed using statistical methods. Data collection tool is a researcher-made questionnaire, which was used to examine its validity from the specialists and experts in quantitative and relative content validity coefficient, and to examine its reliability, was used Cronbach's alpha. The statistical sample includes two groups, 19 people in the qualitative section and 550 people in the quantitative section, selected using convenience sampling. Data analysis includes initial coding, classification, extraction of indicators and variables, descriptive and inferential statistics such as one sample t-test, analysis of variance, Pearson correlation, and linear regression. Results showed residence index with the maximum mean and minimum dispersion indicates the its importance and diversity for pilgrims. The recreational and commercial services index with the lowest mean showed less importance. Correlation results indicate a positive and significant relationship between the attraction index and other indicators at the 0.001 level, which shows that as tourist attractions are strengthened, other services and infrastructure are equally effective in improving the pilgrims' experience. Results of compare means between pilgrims and local residents showed in the catering service and residence indexes, mean of rank pilgrims (253.21 and 254.49) are higher than local residents (239.65 and 234.55) at a significance level of 0.398 and 0.215, respectively. As a result, improving tourism infrastructure, accessibility and improving the quality of recreational and medical services can lead to increased pilgrim satisfaction.

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Introduction

Religious tourism is one of the oldest and most sustainable forms of tourism in the world, with deep roots in the history and culture of human societies. This type of tourism has a special place in various societies, especially in countries with sacred sites, which are not only religiously and culturally important, but are also known as an important source of income and economic opportunities for local communities (Pourang et al., 2010). Religious tourism refers to travel undertaken by individuals for religious and spiritual purposes, especially pilgrimages to sacred and religious sites, and often includes visiting religious sites, participating in religious ceremonies, and interacting with religious communities (Yasuda, 2023). This type of tourism can be considered not only as a religious activity, but also as an economic and cultural product, and in addition to meeting the spiritual needs of pilgrims, it provides significant economic potential for local communities (Mayasari & Fatgehipon, 2023). In other words, religious tourism can create a bridge between religious and economic goals, often taking place in areas with rich cultural heritage and sacred sites. This type of tourism initially began as a religious and spiritual activity and over time has become an economic and social phenomenon. Religious tourism creates unique spatial patterns due to the high concentration of population in specific destinations, such as holy places and pilgrimage sites. These patterns, on the one hand, reflect the flows of pilgrims and tourists to specific destinations, and on the other hand, they are influenced by various factors such as transportation infrastructure, accommodation facilities, urban management, and socio-cultural characteristics of the region (Prastiwi & Wardhana, 2024). Tourism infrastructure includes all facilities and amenities that are created to support tourism activities. This infrastructure includes transportation, accommodations, health services, restaurants, and recreational facilities (Mawadah & Nurhidayati, 2024). Tourist management refers to the process of planning and controlling the flow of people in a space in order to maintain their safety, well-being, and positive experience. This concept is very important in high-traffic places, including religious places (Hussein et al, 2024, pp. 11). Religious tourism can also be defined as an infrastructure-based tourism in which the development of urban and service infrastructure plays an important role in improving the quality of pilgrims' experience (Abdulwahab & Hamza, 2017). The main question of this research is what strategies can help develop religious tourism in the city of Karbala with an emphasis on improving the pilgrims' experience and fully utilizing the economic and social capacities of this city. Therefore, it is necessary to develop comprehensive and practical strategies for the development of religious tourism in Karbala that will not only increase the pilgrims' satisfaction, but also contribute to the sustainable economic and social development of this holy city. Therefore, the purpose of this research is to examine and develop comprehensive strategies for the development of

religious tourism in the city of Karbala with an emphasis on improving the quality of the pilgrims' pilgrimage experience and fully utilizing the economic and social capacities of this holy city.

In contemporary times, religious tourism has become a global industry that has widespread economic, social, and cultural impacts. Countries such as Iraq, Iran, Saudi Arabia, and India have been able to use this type of tourism as a tool for economic and social development by exploiting holy sites and developing tourism infrastructure. In this regard, the city of Karbala hosts millions of pilgrims from all over the world every year who travel to this city to visit the holy shrine of Imam Hussein (AS) and Hazrat Abu al-Fazl al-Abbas (AS) (Yasuda, 2023). However, despite Karbala's religious and cultural importance, the city still faces numerous challenges in terms of pilgrim management and tourism development. Inadequate infrastructure, transportation problems, inadequate health and accommodation services, and the lack of comprehensive planning for tourist management are among the problems that not only affect the pilgrims' pilgrimage experience, but can also lead to a decrease in the attractiveness of this religious destination (Mawadah & Nurhidayati, 2024). The experience of tourism management in other religious cities such as Najaf has shown that religious tourism management has improved with increased governance capacities and active participation of the local community. This approach allows the local community to play a role not only as consumers but also as active forces in the management and development of religious tourism (Yasuda, 2023). In this framework, integrating local businesses into tourism processes can help maximize economic benefits and ensure that the local community benefits from this process (Mawadah & Nurhidayati, 2024). Although religious tourism offers significant opportunities for economic and cultural development, it also presents challenges. Crowding during religious events, pressure on urban infrastructure, and environmental issues are among the challenges facing the industry (Kamel Alrawe & Muwafaq Qasim, 2018). Religious pilgrimages to Karbala, in addition to their spiritual and moral dimensions, also have broad economic, social, and cultural impacts on the city. Despite this importance and high status, religious tourism in Karbala faces numerous challenges that require in-depth attention and study (Christia et al, 2018). One of the main problems is the inadequacy of tourism and urban infrastructure. The large volume of pilgrims throughout the year, especially during peak pilgrimage times such as the days of Arbaceen, puts a heavy strain on existing infrastructure. The existing transport, accommodation and health infrastructure do not meet the needs of pilgrims and in many cases, pilgrims face serious problems in these areas. The lack of suitable and standard accommodation centers, an inefficient public transport system, and inadequate health and medical services are among the main infrastructural problems that have negative impacts on the pilgrim experience (Faris & Griffin, 2020). In addition to infrastructure problems, the lack of comprehensive and efficient planning for tourist management has also become a serious challenge. Managing pilgrims during peak times requires careful planning and the use of modern technologies to guide and control

pilgrim traffic. The lack of such planning can lead to excessive crowding, interference in pilgrim movement, reduced safety, and even the occurrence of unfortunate incidents. This issue not only affects the spiritual experience of pilgrims, but can also tarnish the image of the city of Karbala as a safe and suitable destination for pilgrimage (Raeda & Asadi, 2020).

On the other hand, another important challenge is the lack of full exploitation of the cultural and historical potential of the city of Karbala. This city, with its rich cultural and historical heritage, can become an important center of religious and historical tourism, but the lack of sufficient attention to the introduction and protection of this heritage has destroyed many opportunities to attract tourists. In addition, the lack of international cooperation in the field of advertising and marketing of religious tourism has resulted in the potential of Karbala not being properly introduced at the global level and the economic opportunities related to religious tourism not being fully utilized (Kamel Alrawe & Muwafaq Qasim, 2018). Another problem that significantly affects the pilgrim experience is the lack of adequate services and facilities to provide better experiences to pilgrims. Low quality accommodation services, lack of desirable health and medical facilities, and lack of accurate information and guidance regarding pilgrimage and cultural sites are all factors that can negatively affect the pilgrim experience. Improving these services requires serious investments and international cooperation to provide a better and more complete experience for pilgrims (Faris & Griffin, 2020). Modern marketing strategies play an important role in introducing Karbala as a religious tourism destination. The use of social media and new media trends can greatly contribute to increasing tourism visibility and engagement. The use of these tools can significantly improve communication and engagement (Hussein et al, 2024). Furthermore, implementing targeted marketing strategies that emphasize specific attractions and unique activities in Karbala could attract more tourists. This strategy is similar to the 3A model (Attractions, Activities, Accessibility) that has been successfully applied in other religious tourism destinations (Mayasari & Fatgehipon, 2023). The lack of full exploitation of Karbala's cultural and historical potential, as well as the lack of international cooperation in the field of religious tourism, has destroyed many economic and social opportunities for this city. Therefore, it is necessary to develop and implement effective strategies for the development of religious tourism, while simultaneously preserving and promoting the religious and cultural values of this city, and improving infrastructure, service, and management conditions (Mayasari & Fatgehipon, 2023). Developing sustainable strategies for the development and spatial distribution of religious tourism can help improve the quality of services, increase pilgrim satisfaction, and protect attractions and resources. These strategies should include developing tourism infrastructure, improving transportation, improving health and accommodation services, managing crowds during peak pilgrimage times, international advertising and marketing, training staff and tourists, protecting cultural and religious heritage, as well as attracting foreign investment and international cooperation (Prastiwi

& Wardhana, 2024). Implementing these strategies can not only help increase pilgrim satisfaction and attract more tourists, but also improve the economic and social conditions of the local community. Of course, challenges such as seasonal fluctuations and environmental issues must also be carefully considered to ensure sustainable growth (Mayasari & Fatgehipon, 2023). The role of technology in the management of this tourism has also been highlighted. The use of e-tourism to organize pilgrim services in Karbala has clearly shown that this type of technology can increase the productivity and efficiency of the services provided (Tajbakhsh, 2020, p. 151, Al-Mayali et al., 2021, p. 32). Therefore, the purpose of this research is to investigate and develop comprehensive strategies for the development of religious tourism in the city of Karbala, with an emphasis on improving the quality of the pilgrims' pilgrimage experience and fully exploiting the economic and social potential of this holy city.

Methodology

The present study was conducted in three domains, thematic, spatial, and temporal, to develop strategies for developing religious tourism in the city of Karbala. The thematic scope of this research includes the study and analysis of religious tourism development strategies. This research focused on the main areas including improving tourism infrastructure, managing the pilgrim population, improving the quality of accommodation and health services, protecting cultural and religious heritage, and international marketing. It also examines the role of local community participation and attracting foreign investment in the sustainable development of religious tourism. The spatial domain of the research is the city of Karbala in Iraq, which is considered one of the most important religious centers in the Islamic world. Also, the time scope of the research includes the period from 2024 to 2025. Data related to this research were collected and analyzed through field studies and observations, semi-structured questionnaires and interviews, and the use of library resources related to the development of religious tourism during this period. In this study, in order to identify the factors affecting the development of tourism strategies with an emphasis on religious tourism in the city of Karbala, the research process was conducted in two stages: qualitative and quantitative. The qualitative stage includes reviewing the research background, identifying important components, and building a qualitative model based on the obtained components. In the quantitative stage, questionnaires designed based on the qualitative model were distributed among specialists and experts, and the final results were evaluated and validated using statistical techniques.

In the qualitative stage, first, by examining the research background and previous studies, the components affecting the development of tourism development strategies were identified, with an emphasis on religious tourism in the city of Karbala. Then, these components were determined by sending a questionnaire to experts and screening them. Finally, a qualitative research model was built

based on the identified components. The components identified in the qualitative stage are as shown in Table 1.

Table 1. Identified components of tourism development strategies with emphasis on religious tourism in the city of Karbala in the qualitative stage

Index	Subcomponent	Code	Term	Source
Attraction	Pilgrimage	1	Attractions related to religious sites such as shrines and holy mosques	Yasuda, 2023 Hasanah et al., 2023
	Non-pilgrimage	2	Cultural, historical and natural attractions related to religious tourism	
Accessibility	Airplane	3	Access to the destination via domestic and international flights	Khedhir, 2024 Abdulvahhab and Hamza, 2017 Raeda and Asadi, 2020
	Bus	4	Access to the destination via intercity buses	
	Train	5	Access to the destination via the rail network and passenger trains	
	Passenger car	6	Access to the destination via personal transportation and car	
Residence	Hotel	7	Accommodation in multi-star and luxury hotels	Fermancia, 2017 Ulya & Futaqi, 2022
	Apartment hotel	8	Accommodation in hotel apartments suitable for families and groups	
	Hospitable	9	Stay in cheaper, local guesthouses	
	Camp	10	Staying in pilgrimage camps or nature tours	
	School	11	Using schools as temporary accommodation on special occasions	
	Pilgrimage	12	Accommodation in special pilgrim hostels	
	Inn	13	Stay in traditional and inexpensive inns	
Transportation	Bus	14	Using buses to transport pilgrims within the city	Kamel Alrawe & Muwafaq Qasim, 2018
	Taxi	15	Using taxis to transport pilgrims within and outside the city	

Index	Subcomponent	Code	Term	Source
	Other vehicles	16	Using other means of transport such as minibuses, etc.	
Catering services	Restaurant	17	Serving local and international cuisine in restaurants	Al-Saeed, 2024
	Coffee shop	18	Serving drinks and snacks in coffee shops	
	Sandwich	19	Providing light and quick meals in fast food restaurants	
Medical services	Hospital	20	Providing advanced medical services in hospitals	Nina & Raeda, 2022
	Clinic	21	Providing primary care services in clinics	
	Emergency	22	Providing emergency services and medical emergencies on site	
	Pharmacy	23	Access to medications and medication counseling	
Entertainment and business services	Shopping centers	24	Offering various goods and products in large shopping malls	Widodo and Indrianto, 2022
	Recreation centers	25	Recreational facilities and leisure centers	
Institutional and organizational elements	Travel service offices	26	Organization and management of pilgrimage trips	Farida et al., 2020 Heidari et al., 2021
	Advertising tools	27	Using advertising and marketing to attract pilgrims	
	Tourism education centers	28	Training tourism-related skills for local employees	
	Tourism Management	29	Overall management of religious tourism in the destination	

The statistical population of this study includes two main groups: one group is religious tourists to the city of Karbala, meaning pilgrims who travel to Karbala for pilgrimage. The second group of local residents and stakeholders includes local officials, hotel managers, tourist guides, and local residents. To select the desired samples, stratified convenience sampling method was used. The main goal of the qualitative part of the research was to achieve depth and richness of data to provide accurate analyses of the experiences and perspectives of different stakeholders. Accordingly, the sample size in this part was selected in a way that could achieve theoretical saturation; that is, where the collection of new data does not lead to the discovery of new information or patterns. For the qualitative part of the research, 5 local officials and hotel managers, 5 tourist guides, and 9 local residents (total 19 people) were selected as the sample size. Purposive sampling was used for this selection. This method allows the researcher

to select individuals who have the most information and experience related to the research topic. Thus, the samples included individuals who can provide diverse and in-depth perspectives and experiences about the current state of religious tourism in Karbala. In the quantitative sample section, due to the large size and uncertainty of the statistical population, in order to achieve reliable results, 400 tourists, 50 local officials and managers, and 100 local residents (total 550 people) were surveyed as the sample size. To collect data from structured questionnaires to collect quantitative data from pilgrims and local residents, direct visits and observations of religious sites and tourism infrastructure in Karbala were conducted to assess the current situation and to design and distribute them. The questionnaires included closed and open questions and were translated into Arabic and Persian to facilitate responses for pilgrims and local residents. The questionnaires were distributed and collected in person. Qualitative data from the interviews were analyzed using qualitative content analysis. This method included coding, categorization, extraction of key variables and patterns, and synthesis of findings for a comprehensive analysis of the results.

Quantitative data collected through questionnaires were analyzed using descriptive and inferential statistics methods in the SPSS software environment. These analyses include descriptive statistics (mean, standard deviation, variance, skewness, standard error of skewness, elasticity, and standard error of elasticity) and inferential statistics (independent t-tests, analysis of variance, Pearson correlation, and linear regression). Also, in order to examine the face validity of the research tool from the perspective of specialists and experts, and to quantitatively examine the content validity, the Content Validity Ratio (CVR) was used. To calculate the CVR, experts were asked to evaluate each item based on a two-part spectrum of “necessary” and “not necessary.” Then, the responses were calculated according to equation (1), and if the calculated value is greater than the values in table (2), the content validity of that item is accepted. In this regard, n_e is the number of experts who responded to the necessary option and N is the total number of experts.

Relationship (1)
$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

Table 2. Criteria values for making decisions about CVR (Hajizadeh & Asghari, 2011, p. 220)

Number of panel experts	5	6	7	8	9	10	15	20	25	30	40
Minimum validity value	1	1	1	0.85	0.78	0.69	0.49	0.42	0.37	0.33	0.29

In this study, the questionnaire components and questions were provided to 15 experts, and based on the number of respondents, the CVR results in Table (3) were calculated for each item and question in the questionnaire. Given that the calculated CVR value is greater than the criterion validity value (values in Table 2), the content validity of the items is confirmed.

Table 3. CVR values and content validity of the research instrument (N=15)

Item code	1,2,4,7,9,11,12,14	3,5,6,8,10,13,15,16,19,20,23,24,27,28,29	17,18,21,22,25,26
ne	14	13	12
CVR	0.86	0.73	0.6

In order to examine the reliability of the research questionnaires, Cronbach's alpha method was used, which, considering the alpha values above 0.7, confirms the reliability of the questionnaire (Table 4).

Table 4. Reliability of research instrument

Index	Questions	Cronbach's alpha value
Attraction	1-2	0.743
Accessibility	3-6	0.852
Residence	7-13	0.896
Transportation	14-16	0.754
Catering services	17-19	0.757
Medical services	20-23	0.812
Entertainment and business services	24-25	0.709
Institutional and organizational elements	26-29	0.809

To analyze the data collected in the quantitative section, descriptive statistics such as mean, etc., dispersion indices such as standard deviation, variance, and other indices such as inferential statistics were used. Inferential statistical methods were used to analyze the data in order to extract meaningful results from the collected data. Depending on the type of data and research objectives, various statistical tests were used in the SPSS software environment.

Study Area

The city of Karbala is the capital of Karbala Province in Iraq, located at a geographical location between 32°33' and 32°39' north latitude and 43°57' and 44°4' east longitude (Figure 1). The height of this city is between 20 and 45 meters above sea level, and its highest part is related to the area around the Holy Haram and the lowest point is the eastern part of the city, namely the Karbala-Tavirij Road, which is located near the Euphrates River. Of course, as the city moves towards the southwest, the height also increases to 50 meters above sea level. In general, there are no significant hills or heights around Karbala, and the area is generally flat and level. Most of the areas surrounding the city of Karbala consist of vast plains and flat lands formed from river sediments. The Euphrates River is one of the most important water resources in this region, passing near Karbala and playing an important role in providing drinking water and irrigating the surrounding lands. The soils around Karbala are mainly sedimentary,

formed from river sediments. These soils are usually fertile and suitable for agriculture. Due to its specific geological conditions, the Karbala region lacks rich mineral resources and consists mostly of soft sediments and alluvial soils. The vegetation cover of the region is limited due to the hot and dry climate. Drought-resistant plants such as drought-loving and salt-loving shrubs and trees are found around Karbala (Tayyar et al., 2023).

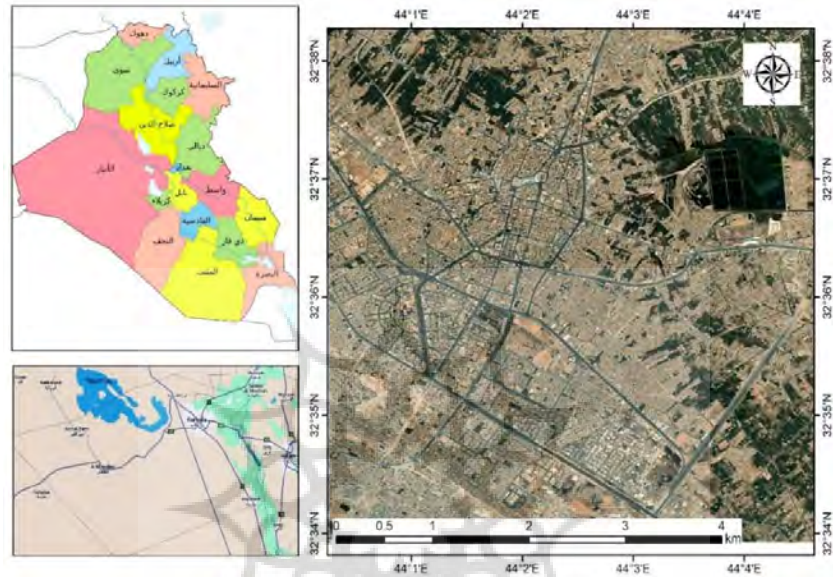


Figure 1. Geographical location of the city of Karbala

The urban fabric of Karbala is densely built due to its religious and historical importance. The streets and markets are mainly located near the shrine of Imam Hussein (AS) and the shrine of Hazrat Abu al-Fazl al-Abbas (AS). The two main shrines of Karbala are located in the city center and are the most important points of attraction for pilgrims. Due to the presence of the two holy shrines in the city of Karbala, 100 mosques and 23 religious schools have been built in the city (Daghagheleh & Darvishi, 2022).

Karbala is one of the most popular and famous religious tourism destinations in the world, which includes various religious and historical attractions and sites such as the shrine of Imam Hussein (AS), the shrine of Hazrat Abbas (AS), Bein-Al- Hamein, Ghatlegah, Kheimh-Gah, Tal Zeinabiyyeh, the shrine of the martyrs of Karbala, the Cave of Abbas, the left and right shrines of Hazrat Abbas (AS), the shrine of Hazrat Mahdi (AJ), the shrine of Imam Sadegh (AS), the crypt of Hazrat Abbas (AS), the tomb of Amir Kabir, the shrine of Horr- Ebn Yazid Riyahi, the shrine of Sayyid Ebrahim Mojab, the shrine of Habib Ebn Mazaher, the shrine of Ebn Fahad Helli, the shrine of Emamzadeh Akhras Ebn Kazem, the museum of Imam Hussein (AS), the museum of Islamic memories, the markets around the two holy

mosques, the Euphrates River, the Alqameh River, the fountain of Imam Ali (AS), the Al-Akhzir Castle, the Indian Castle, the Atshan Palace, the Palace of Nakhileh, the White Bridge, Razzazeh Lake, and the ruins of Bable (Figure 2).

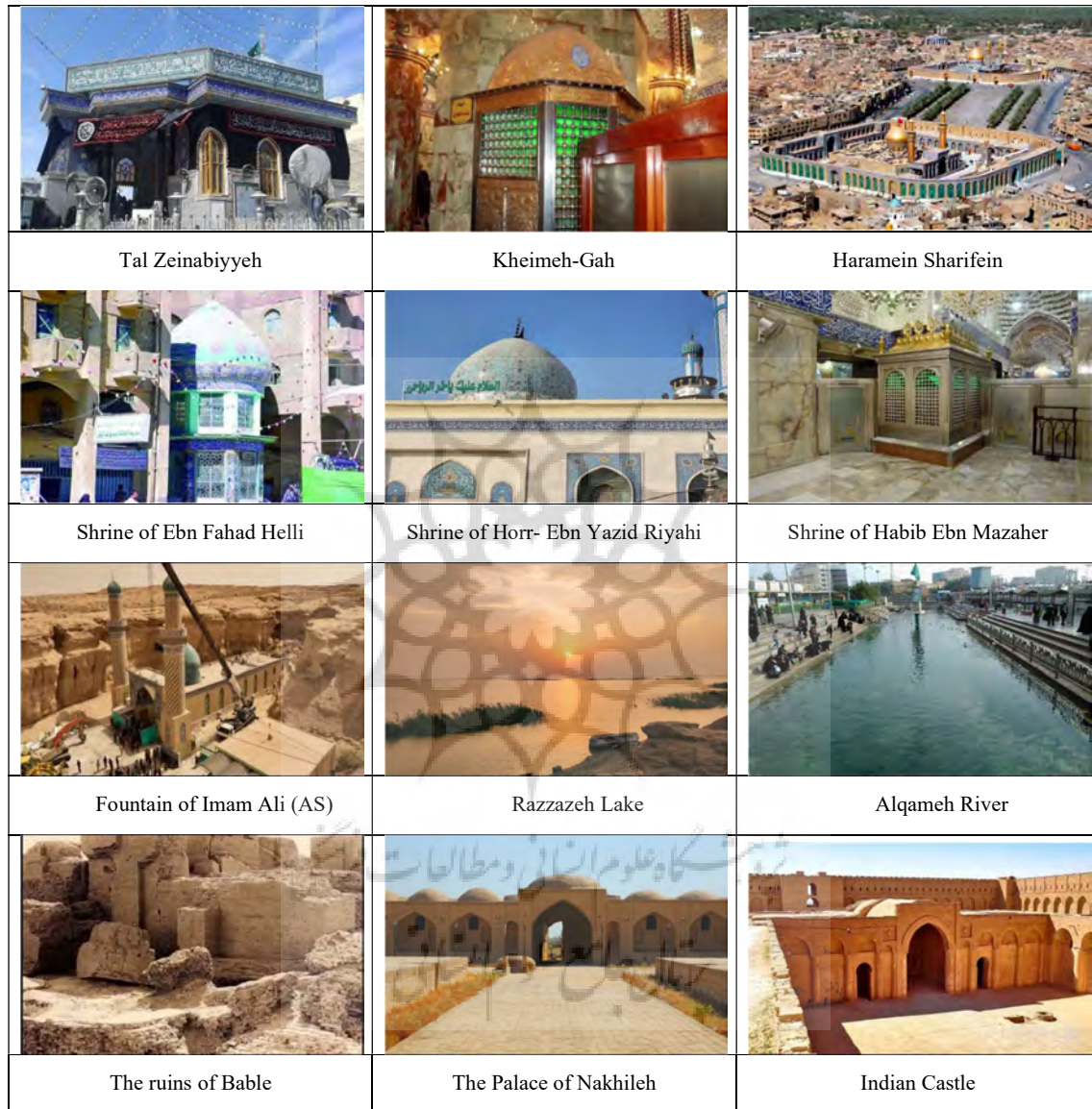


Figure 2. A view of the most important tourist attractions in the city of Karbala

Findings and Results

The results of descriptive statistics showed that the average gender of pilgrims is 1.47, which indicates that there is a relatively balanced mix of men and women among pilgrims, but the proportion of women

is slightly higher. The standard deviation of 0.499 indicates a relatively low dispersion of the data, and the skewness of 0.141 confirms a balanced distribution of the data. kurtosis 1.990 - indicates a distribution that is flatter than normal. Skewness - 1.011 and kurtosis - 1.021 indicate that the data for this group is skewed towards men and the dispersion is relatively high. The average gender ratio of neighborhood residents is 1.60, indicating a balanced mix of men and women, although the proportion of men is higher. Skewness - 0.414 and kurtosis - 1.866 indicate that the data distribution is approximately normal. The mean age in the pilgrim group is 44.80 years, which indicates the presence of people of different ages in this group. The standard deviation of 15.494 indicates a relatively high dispersion of the age data. The skewness of 0.133 indicates the relative balance of the data, and the kurtosis of 1.240 indicates that the data distribution is flatter than normal. The average age of the group of officials and managers is 46.02 years, which indicates the presence of people with a higher average age than the pilgrims. Skewness - 0.109 indicates the relative balance of the age data, and kurtosis - 1.226 confirms the relatively flat distribution of the data. The average age of local residents is 42.14 years, which is slightly lower than the other two groups. The dispersion of the data is relatively low, with a standard deviation of 14.363. The skewness of 0.206 indicates a slight bias towards younger people. The average educational attainment of pilgrims is 2.41, indicating that most pilgrims have a diploma or higher. A standard deviation of 1.107 indicates the average spread of the educational data. A skewness of 0.068 means that the data is approximately evenly distributed, and a kurtosis of -1.337 indicates that the data is more evenly distributed than normal. The average education level of officials and managers is 2.80, indicating that local officials and managers have a higher level of education than pilgrims and local residents. Skewness 0.408 - indicates a bias towards people with higher education. The average education of local residents is 2.27, indicating that the level of education in this group is relatively lower than the other two groups. A skewness of 0.275 indicates a relatively balanced distribution of the data (table 5).

Overall, in the group of pilgrims, the proportion of women is higher and a relatively wide age distribution is observed. In the group of local officials and managers, men and people with higher education predominate, and this group also has a higher average age. Local residents have a low level of education, but the gender distribution is relatively balanced. This analysis shows that there are significant differences between different groups of the statistical population, which can be used for planning and policymaking related to the development of religious tourism.

The results of descriptive statistics of the main indicators of the study showed that the accommodation index with the highest mean (20.75) and the highest dispersion indicates the importance and diversity of accommodation services for tourists visiting the city of Karbala. On the other hand, the recreational and commercial services index, with a mean of 5.91 and a standard deviation of 2.466, has

the lowest value among the indices, which indicates that recreational and commercial services in Karbala are of less importance or are provided at a relatively lower quality level. Skewness and kurtosis also indicate that the data distribution is relatively balanced, but slightly flatter than the normal distribution (Table 6). Based on these results, the accommodation index is more important among others and there is a need for more attention in developing accommodation services in Karbala. Also, improving recreational and commercial services can increase the overall satisfaction of pilgrims. These statistics can help in more accurate planning and optimization of religious tourism services.

Table 5. Descriptive statistics of gender, education level, and age variables in different groups of the statistical population

Variable	Group	Mean	%95 confidence interval		Standard deviation	Skewness	kurtosis
			Lower	Upper			
Gender	Pilgrims	1.47	1.42	1.51	0.499	0.141	-1.990
	Officials and managers	1.72	1.59	1.85	0.454	-1.011	-1.021
	Local residents	1.60	1.50	1.70	0.492	-0.414	-1.866
Age	Pilgrims	44.80	43.27	46.32	15.44	-0.133	-1.240
	Officials and managers	46.02	41.36	50.68	16.39	-0.109	-1.226
	Local residents	42.14	39.29	44.99	14.36	0.206	-1.032
Education	Pilgrims	2.41	2.30	2.52	1.107	0.068	-1.337
	Officials and managers	2.80	2.47	3.13	1.161	0.408	-1.310
	Local residents	2.27	2.06	2.48	1.033	0.275	-1.074

Table 6. Descriptive statistics related to research indicators (N=550)

Index	Mean	Standard deviation	Variance	Skewness	Standard error of skewness	kurtosis	Standard error of kurtosis
Attraction	5.85	2.01	4.04	0.101	0.104	-0.65	0.208
Accessibility	11.95	2.812	7.910	0.012	0.104	-0.48	0.208
Residence	20.75	7.97	59.433	0.016	0.104	-0.504	0.208
Transportation	-0.208	-0.723	0.104	0.126	0.104	-0.723	-0.208
Catering services	8.77	3.437	11.81	0.07	0.104	-0.74	0.208
Medical services	11.73	4.496	20.212	0.087	0.104	-0.653	0.208
Entertainment and business services	5.91	2.466	6.081	-0.006	0.104	-0.985	0.208
Institutional and organizational elements	11.76	4.580	20.978	0.052	0.104	-0.769	0.208

The results of evaluating the normal distribution of data using the Kolmogorov-Smirnov test showed that all indicators have a significance level of less than 0.005. This indicates that the data does not follow a normal distribution, and therefore nonparametric tests were used for statistical analyses. In this regard, the recreational and commercial services index, with a test statistic value of 0.12, has the greatest difference from the normal range (Table 7).

Table 7. Test for evaluating the normal distribution of research indicators (N=550)

Index	Mean	Standard deviation	t	Sig.
Attraction	5.85	2.01	0.117	0.000
Accessibility	11.95	2.812	0.092	0.000
Residence	20.75	7.709	0.075	0.000
Transportation	8.74	3.459	0.095	0.000
Catering services	8.77	3.437	0.093	0.000
Medical services	11.73	4.496	0.085	0.000
Entertainment and business services	5.91	2.466	0.12	0.000
Institutional and organizational elements	11.76	4.58	0.11	0.000

The results of Spearman's correlation indicate a positive and significant relationship between the indicators at a significance level of less than 0.01. The attraction index has a significant relationship with other indices (except the accessibility index), which shows that as tourist attractions are strengthened, other services and infrastructure also have an impact on improving the pilgrims' experience. The relationship between the accessibility index and other indicators is not significant (significance level greater than 0.05), which indicates that pilgrim accessibility may need further improvement or development compared to other indicators (Table 8). These results show that many indicators such as attraction, medical services, transportation, recreational and commercial services, and institutional and organizational elements have significant correlations, significant effects on each other, and a positive effect on the overall experience of pilgrims. In contrast, the accessibility index is less important and needs to be revised.

The results of the Mann-Whitney test for comparing the mean rank between pilgrims and local residents showed that in the Catering service index, the mean rank of pilgrims (253.21) is slightly higher than that of local residents (239.65). However, the Mann-Whitney U statistic is 18914.500 and the significance level is 0.398, which is higher than 0.05. This shows that there is no significant difference between the two groups in this indicator. In the residence index, the average rank of pilgrims (254.49) is higher than that of local residents (234.55). The Mann-Whitney U statistic is 18405.00 and the significance level is 0.215. This is also higher than 0.05, indicating that there is no significant difference

in this indicator between the two groups. Therefore, no significant difference is observed between pilgrims and local residents in both catering and residence service indicators (Table 9).

Table 8. Results of Spearman's correlation test between research indicators (N=550)

Index	Attraction	Catering services	Transportation	Medical services	Entertainment and business services	Institutional and organizational elements	Residence	Accessibility
Attraction	1.000	0.469	0.420	0.485	0.484	0.460	0.474	0.012
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.777
Catering services	0.46	1.000	0.745	0.757	0.660	0.746	0.743	0.050
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.240
Transportation	0.42	0.745	1.000	0.76	0.684	0.725	0.726	0.054
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.205
Medical services	0.48	0.757	0.746	1.000	0.699	0.754	0.766	0.052
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.224
Entertainment and business services	0.48	0.660	0.684	0.699	1.000	0.706	0.730	0.044
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.299
Institutional and organizational elements	0.46	0.746	0.725	0.74	0.706	1.000	0.753	0.034
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.431
Residence	0.47	0.743	0.726	0.766	0.730	0.735	1.000	0.042
sig (2-way)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.325
Accessibility	0.012	0.050	0.054	0.052	0.044	0.034	0.042	1.000
Ssig (2-way)	0.777	0.240	0.205	0.224	0.299	0.431	0.325	0.000

Table 9. Compare mean rank of Catering and Residence service indicators using the Mann-Whitney test

Index	Group	Number of samples	Average rank	Total ranks	Mann-Whitney test	Wilcoxon test	Z-value	Significance level (two-sided)
Catering services	Pilgrims	400	352.21	101285.5	18914.5	23964.5	-0.845	0.398
	Residents	100	239.65	23964.5				
Residence	Pilgrims	400	254.49	101795	18405.0	23455	-1.239	0.215
	Residents	100	234.55	23455				

The results of the Friedman test between the bus, taxi, and other vehicles subcomponents in the transportation index showed that the average ranks of these three subcomponents with values of 1.98, 2.00, and 2.01 do not differ significantly in improving the pilgrims' experience. Also, the significance level of the Friedman test is greater than 0.05 with a value of .687, which indicates that there is no significant difference between the transportation indicators (Table 10).

Table 10. Results of Friedman ranking test between subcomponents of the transportation index (N=550)

Index	Friedman test statistic	Amount of statistics	Subcomponent	Mean of rank
Transportation	Chi-square	0.751	Bus	1.98
	Degree of freedom	549	Taxi	2.00
	statistical significance	0.687	Other equipment	2.01

The results of the one-sample t-test for the medical services index showed that the mean of the medical services index, with a value of 11.73, differs from the desired fixed value of 10 at a significance level of less than 0.05 with a value equal to 0.000. The t-statistic value obtained is 9.020 and the 95% confidence interval for the mean difference indicates that the actual mean difference is between 1.35 and 2.11. The effect size of Cohen's $d = 0.385$ also indicates the presence of a medium effect, which means a significant difference between the mean of the health care index and the desired value (Tables 11 and 12). According to the results of the one-sample t-test, it can be concluded that the medical services index in the city of Karbala does not have the desired level and has a significant difference from the desired constant value.

Table 11. Results of one-sample t-test for the medical services index (N=550)

Test value = 10	Mean	Standard deviation	Standard error of the mean	t-statistic	Degree of freedom	Significance level	Mean difference	95% confidence interval of difference
Medical services	11.73	4.496	0.192	9.020	549	0.000	1.729	1.35

Table 12. Effect size of the medical services index

Component	Standard	Point estimate	95% confidence interval	
			Lower	Upper
Cohen's d	4.496	0.385	0.298	0.471
Hedges Amendment	4.502	0.384	0.297	0.470

Discussion & Conclusion

In statistical analysis, the results showed that each of the evaluated indicators directly and indirectly affects the overall experience of pilgrims. In particular, the attractiveness and accessibility index showed that pilgrimage sites and easier access to them have a direct impact on the experience of pilgrims, and improving infrastructure in this area can increase pilgrims' satisfaction. Contrary to expectations, the accommodation and Catering service index did not create a significant difference between domestic and foreign pilgrims, indicating the uniformity of the quality of these services for all groups. However, improving these services can still lead to an enhanced pilgrimage experience. The analysis of the transportation index showed that the type of vehicle does not have a significant impact on the pilgrims' experience, in other words, improving public transportation alone is not enough and other factors must be considered. The analysis of the health service index also confirmed that the quality of health services needs to be improved. This becomes especially important at times when the volume of pilgrims increases. Indicators of recreational and commercial services also showed that these services can have a positive impact on pilgrims' satisfaction, indicating the need to expand and improve recreational and commercial facilities in Karbala. Finally, institutional and organizational indicators also showed that they play an important role in tourism management and the pilgrim experience. In other words, improving management systems and creating organizational collaborations will lead to an overall improvement in religious tourism. The results of the study showed that attraction and accessibility indicators have a significant impact on the pilgrims' experience in Karbala. In particular, according to the research findings, improving religious attractions and facilitating access to these places can have significant positive impacts on the pilgrims' experience. This result is consistent with the findings of Parastouei (2024), who emphasizes the sustainable development of religious tourism with regard to social justice and religious attractions. On the other hand, Hussein et al. (2024) showed that the use of new technologies such as social media can have a positive impact on the performance of tourism offices. The results of this study showed that the use of such technologies can help improve pilgrims' access and enhance their experience, which is consistent with our results regarding the impact of the accessibility index. Also, the results related to the transportation index, which showed that there was no significant effect between types of vehicles, are consistent with the findings of Al-Saeed (2024) regarding the importance of sustainable transportation in religious cities. The results suggest that improving public transportation alone is not enough and that other aspects should also be considered. Within the theoretical framework of this research, the development of religious tourism was defined as a multifaceted process influenced by various factors such as attractions, accommodation, Catering services, and transportation. The results of the study showed that the attraction index has the greatest impact on the pilgrims' experience, which is consistent with the theoretical foundations proposed by

Fatgehipon (2023) who emphasizes 3A strategies. These strategies include attractions, activities, and accessibility, which indicates the importance of these factors in the overall tourist experience. Regarding the accommodation and Catering index, the research findings showed that there is no significant difference between domestic and foreign pilgrims. This result is consistent with the findings of Mawadah and Noorhedayati (2024), who emphasize the importance of improving local infrastructure in tourism development. Improving accommodation infrastructure and Catering services can have a positive impact on overall pilgrim satisfaction. Also, the indicators of medical services showed that this indicator is not at a desirable level and needs to be improved. This finding is consistent with the research of Al-Saeed (2024), which points to the need to improve health and medical infrastructure in Karbala. Ultimately, the results of this study showed that the development of religious tourism requires attention to numerous factors, including religious attractions, accommodation infrastructure and Catering services, transportation, and medical services. Improving these factors can contribute to a better experience for pilgrims and pave the way for the sustainable development of religious tourism.

Implications

Based on the results, practical suggestions are presented to improve the current situation in terms of infrastructure, services, transportation, access and routes, tourism management, increasing international cooperation, and enhancing the pilgrim experience, which include the following. These suggestions can make a significant contribution to the sustainable development of tourism and enhance the pilgrims' experience in the city of Karbala.

- Development and renovation of accommodation facilities: It is suggested that hotels, guesthouses and other accommodation centers near religious sites be developed and renovated according to the needs of pilgrims. This measure can be effective in increasing the reception capacity and improving the accommodation experience of pilgrims.
- Increasing medical and health centers: Given that the medical services index has not reached the desired level, it is necessary to build and equip medical centers near pilgrimage sites, especially during peak pilgrimage times (such as Arbaceen).
- Improving the quality of catering services: According to the research results, catering services such as restaurants and cafes should be improved in terms of quality and hygiene. Providing diverse and hygienic foods that suit the different tastes of pilgrims can increase their satisfaction.
- Development of entertainment and business services: It is proposed that more shopping and entertainment centers be built near religious sites so that pilgrims can enjoy a wider range of services during their journey. This measure could both improve the pilgrim experience and increase local revenues.

- Development of public transportation fleet: According to the research results, the public transportation system needs to be improved and developed. Increasing the number of buses and taxis, as well as creating direct lines to pilgrimage sites, can be effective in reducing congestion and facilitating access to religious sites.

- Creating clean transportation routes: In order to reduce pollution and preserve the environment, it is proposed to use clean vehicles such as electric buses and hybrid vehicles to transport pilgrims. This measure will not only help improve the pilgrims' experience but will also lead to preserving the environment.

- Increasing international and digital advertising: To attract more pilgrims and better introduce the religious sites of Karbala to the world, it is suggested to use digital advertising strategies and social media. International advertising in the form of high-quality films and images of the pilgrimage sites can help to better introduce this religious destination.

- Training of human resources: Employees working in the tourism industry should receive the necessary training in the areas of Catering, health, and tourism guidance, considering the needs of pilgrims. This will lead to improving the quality of services and increasing pilgrims' satisfaction.

- Development of pilgrimage walking routes: Given the importance of the Arbaeen walking ceremony and other religious ceremonies, it is proposed that pilgrimage walking routes be improved and more amenities such as health services and rest areas be provided along the route.

- Creating signboards and information: Installing signboards and providing accurate information to pilgrims in the form of maps and mobile phone applications can help facilitate easier access to religious sites and facilitate the flow of pilgrims.

- Attracting foreign investment: It is suggested that international cooperation and foreign investment be used to develop tourism infrastructure. These cooperations can help improve the quality of tourism services and infrastructure and bring more foreign exchange earnings to the city of Karbala.

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