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The Role of Value Proposition Differentiation in Specialized Medical Centers on the Attraction and Retention of Tourists in Mashhad

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ABSTRACT

Various countries—particularly developing nations such as Iran—have increasingly become major destinations for medical tourism due to their lower costs and acceptable quality of medical services. The primary objective of this study is to examine the role of value proposition differentiation in specialized medical centers in attracting and retaining health tourists. The concept of value proposition refers to the set of tangible and intangible benefits offered by a medical center to patients in order to meet their needs more effectively than competitors. This study analyzes different components of the value proposition, including the quality of medical services, service costs, physician specialization, and welfare services. Moreover, the conducted reviews indicate that differentiation in the value proposition increases the attractiveness and competitiveness of medical centers in the global medical tourism market. Methodologically, this research was conducted using a descriptive–analytical approach, employing both quantitative and qualitative data. The findings indicate that factors such as physician specialization, quality of medical services, competitive costs, and supplementary services such as accommodation and transportation have the greatest impact on attracting medical tourists. Furthermore, the provision of high-quality services and post-treatment follow-up are among the most influential factors affecting the retention of health tourists.

Keywords: medical tourism, value proposition, attraction of health tourists, quality of medical services

Introduction

The rapid expansion of the global health tourism industry over the past two decades has transformed many countries into competitive destinations for medical, wellness, and therapeutic travel. Health tourism—which encompasses medical, surgical, preventive, rehabilitative, and wellness services—has become one of the fastest-growing sectors of international mobility, influenced by socioeconomic, technological, and policy-driven developments worldwide (1). Increasing healthcare costs in developed nations, long waiting times, and the globalization of medical knowledge have created strong incentives for patients to seek more affordable, efficient, and patient-centered services abroad (2). In this broader competitive landscape, countries in Asia and the Middle East have emerged as important hubs, attracting millions of health tourists each year, with Iran being one of the most strategically positioned destinations.

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Iran, due to its advanced medical infrastructure, skilled physicians, affordable treatment packages, and growing tourism capacities, has increasingly been recognized as a regional leader in health tourism development (3). Mashhad in particular—home to major university hospitals, specialized medical centers, and religious tourism attractions—has become a focal point for medical tourists from neighboring and regional countries. The convergence of cultural, religious, and clinical motivations strengthens Mashhad's positioning as a hybrid destination capable of offering both spiritual and biomedical services, thereby distinguishing its value proposition from other Iranian and international destinations (4). As global competition intensifies, however, destinations such as Mashhad must increasingly differentiate their value propositions to attract and retain medical tourists.

A key driver of competitiveness in the health tourism market is the development of tailored service models that reflect tourists' expectations, cultural needs, and treatment preferences. Research suggests that medical tourists prioritize not only clinical outcomes but also service quality, communication transparency, destination safety, and post-treatment support (5). These expectations have encouraged medical centers to shift from traditional service delivery toward a more holistic, patient-experience-oriented model of value creation. This includes integrating digital platforms for marketing, enhancing transparency in treatment costs, improving medical–tourist interactions, and establishing destination-wide branding strategies (6). As competition rises, differentiation becomes indispensable: destinations must create unique value propositions that distinguish their medical services, technological capabilities, and tourism-related amenities (7).

While the global medical tourism market continues to evolve, emerging challenges—such as shifting healthcare regulations, public health crises, and geopolitical uncertainties—require destinations to adopt resilient and sustainable strategies (1). To remain competitive, countries must focus on designing business models that integrate sustainability, innovation, and customer value. Saudi Arabia, for example, has recently developed a medical and wellness tourism roadmap using the Business Model Canvas to align infrastructure, policy, and market needs in a coherent strategic framework (8). Such approaches highlight the need for Iran—particularly Mashhad—to employ similar structured models to understand the dimensions of value differentiation and their impacts on tourist attraction and retention.

Within Iran, the literature emphasizes several essential determinants driving medical tourists' preferences. Studies show that digital transformation, ethical marketing, and online recommendation systems significantly shape tourists' decision-making processes and perceptions of service trustworthiness (9, 10). Especially in the digital era, potential tourists rely heavily on online reviews, social media visibility, and multi-channel marketing communications when evaluating medical destinations. Digital marketing models tailored for Iran's medical tourism industry highlight the importance of content accuracy, cultural sensitivity, and interactive information-sharing platforms (11). These findings reinforce the role of technology-enabled value propositions in shaping tourists' perceived safety, confidence, and satisfaction.

Beyond digital factors, local community dynamics also play a major role in building sustainable health tourism ecosystems. A qualitative study in Mazandaran Province showed that community support, local empowerment, and cultural acceptance strongly influence the growth and stability of health tourism clusters (12). These insights suggest that for cities such as Mashhad, the alignment between clinical services and broader community-based tourism infrastructure can enhance the perceived authenticity, safety, and attractiveness of the destination. Additionally, regional marketing models emphasize that cultural tourism, hospitality, and complementary services—such as accommodation, transportation, and translation—are critical in shaping tourists' end-to-end experiences (6).

As global interest in medical tourism expands, competition among private polyclinics, specialty centers, and international hospitals grows steadily. Studies indicate that the competitiveness and performance of private medical centers are influenced by their enterprise resource systems, managerial competencies, and strategic differentiation in service delivery (13). These internal capabilities, when aligned with external market positioning, can substantially improve business performance and patient satisfaction. For destinations such as Mashhad, specialized medical centers must therefore adopt strategic differentiation approaches—focusing on service excellence, technological innovation, and integrated support services—to maintain a competitive advantage.

In addition to institutional competencies, tourists' perceptions form a core determinant of destination attractiveness. Positive attitudes toward medical centers—driven by perceived treatment quality, physician expertise, ethical conduct, and cultural fit—significantly influence tourists' choice behavior and willingness to return (14). Evidence from Southeast Asia demonstrates that mapping and monitoring medical tourism trends helps destinations identify key gaps, anticipate future demands, and refine their value propositions accordingly. For Iranian medical centers, understanding emerging global trends is essential for adapting to the preferences of diverse international patients.

A foundational element of modern health tourism models is the integration of quality function deployment, which links tourist expectations with service design to ensure alignment between needs and service outputs (15). Such analytical frameworks enable hospitals and medical centers to prioritize service attributes that have the highest impact on patient satisfaction, including transparency, communication, comfort, and recovery support. In highly competitive markets, this strategic alignment enhances differentiation and customer loyalty, ultimately contributing to long-term destination sustainability.

Iranian research also confirms that identifying and ranking factors affecting service marketing in health tourism is essential for improving destination performance. For example, studies in Mashhad using fuzzy TOPSIS have identified treatment cost clarity, physician reputation, medical technology, and destination safety as primary decision-making criteria for tourists (16). This suggests that the perceived differentiation of specialized medical centers directly shapes tourists' attraction and retention, especially when centers provide unique, cost-effective, and patient-centered service packages.

Furthermore, the influence of digital marketing and online awareness campaigns on tourists' decision-making has been widely acknowledged (17). Medical tourists increasingly rely on digital platforms to evaluate treatment options, compare prices, and assess the credibility of medical centers. Integrating digital visibility into medical tourism strategies thus supports the differentiation of value propositions and enhances competitive strength.

The adoption of integrated service frameworks—such as health villages—also demonstrates the importance of comprehensive, multi-dimensional medical tourism models. Research on expanding health villages in Iran shows that integrating services, facilities, and community participation can significantly improve the attractiveness and efficiency of medical tourism systems (18). This highlights the interconnected nature of tourism infrastructure, healthcare service quality, and community-based support in shaping tourists' overall experiences.

In addition, prior studies on internet adoption in health tourism emphasize the need for user-friendly digital platforms that facilitate communication, service customization, and online consultation to strengthen destination competitiveness (19). This underscores the role of technological innovation in enhancing value propositions, especially for international tourists who require accessible and trustworthy channels of engagement.

Finally, tourism scholars highlight that in a changing global environment, the development of sustainable strategies is essential for ensuring long-term destination viability (7). This requires aligning service differentiation with environmental, social, and economic considerations, which enables destinations like Mashhad to create integrated systems that support medical, cultural, and tourism advancement simultaneously. Given these extensive bodies of evidence, the differentiation of value propositions in specialized medical centers—encompassing service quality, cost transparency, digital engagement, community support, and competitive positioning—plays a central role in attracting and retaining medical tourists. Despite the growing literature, few studies have systematically examined how differentiated value propositions specifically affect tourist attraction and retention in Mashhad, particularly in the context of specialized medical centers that serve international patients. Therefore, the aim of this study is to investigate the role of value proposition differentiation in specialized medical centers in influencing the attraction and retention of medical tourists in Mashhad.

Methods and Materials

This study employed an exploratory mixed-methods design, integrating qualitative and quantitative phases to achieve a comprehensive understanding of how value proposition differentiation in specialized medical centers influences the attraction and retention of health tourists in Mashhad. The research was first conducted qualitatively to discover the multifaceted dimensions of the phenomenon and to enable the development of the study's conceptual model. In the qualitative phase, the statistical population consisted of eight individuals, including five executive managers of specialized medical centers and three university professors and experts with professional experience in medical tourism and service quality. These participants were selected purposefully based on their expertise and relevance to the research topic. Their insights provided the foundational structure required for designing the quantitative measurement tool.

Following the qualitative stage, the study progressed to the quantitative phase to ensure generalizability of the findings derived from the qualitative data. In this phase, the statistical population comprised approximately ten thousand health tourists visiting Mashhad. Because the exact size of the accessible population could not be strictly determined and was considered unlimited, Cochran's formula was applied to calculate the sample size. The estimated sample size for an unlimited population was approximately 369 individuals. Ultimately, 345 health tourists completed the questionnaires, forming the final quantitative sample for data analysis.

Data collection occurred in two phases. In the qualitative phase, semi-structured interviews were used to gather in-depth information from managers and academic experts. The interview guide included open-ended questions aimed at exploring perceptions of value proposition components, service differentiation, and determinants of tourist attraction and retention in the medical tourism sector. Interviews continued until thematic saturation was reached, and all conversations were recorded and transcribed verbatim to ensure accuracy.

In the quantitative phase, a structured questionnaire was developed based on the themes and indicators extracted from the qualitative findings. The questionnaire included items assessing key components such as medical service quality, physician expertise, competitive costs, welfare and supplementary services, and post-treatment follow-up. Content validity was established through expert review, and reliability was assessed using internal consistency metrics after pilot testing. The instrument was distributed among health tourists through both in-person surveys at medical centers and online platforms targeting individuals who had recently received health-related services in Mashhad.

Qualitative data analysis was conducted using a thematic analysis approach. The transcribed interviews were coded through an iterative process that included open, axial, and selective coding. Emerging concepts were categorized into broader themes to form the preliminary conceptual framework of value proposition differentiation. Credibility and dependability of the qualitative findings were ensured through member checking, expert verification, and maintaining an audit trail throughout the analysis.

Quantitative data analysis followed the development of the finalized questionnaire. The collected data were entered into statistical software to perform descriptive and inferential analyses. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize participant characteristics and core study variables. Inferential analyses, such as correlation coefficients and structural equation modeling, were employed to test the relationships between components of the value proposition and the two outcome variables: attraction and retention of health tourists. Goodness-of-fit indices were examined to confirm the adequacy of the structural model, and significance levels were used to determine the strength and direction of the relationships among variables.

Findings and Results

The demographic characteristics of the respondents indicate that 77.10% of participants were male (266 individuals) and 22.90% were female (79 individuals), showing that male respondents formed the majority. In terms of age distribution, the smallest group belonged to the 25–30 age category with 13 respondents (3.8%), while the largest proportion was observed in the 35–40 age group with 152 respondents (44.1%). Regarding educational level, 10.7% of participants held a diploma or lower, 6.1% had an associate degree, 38.8% held a bachelor's degree, and the largest share—44.3%—had a master's degree or higher. Work experience analysis revealed that 10.4% of respondents had between 1 and 5 years of experience, 29.6% had 5–10 years, 37.1% had 10–15 years, and 22.9% had more than 15 years of professional experience, illustrating that the majority of participants fell into the mid-career experience range.

Table 1. Descriptive Statistics of the Measurement Items

Item	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Question 1	345	1	5	3.78	0.82	-0.496	0.518
Question 2	345	1	5	3.96	0.84	-0.788	0.907
Question 3	345	1	5	4.16	0.839	-0.991	1.23
Question 4	345	1	5	3.93	0.885	-0.846	0.918
Question 5	345	1	5	3.82	0.832	-0.602	0.601
Question 6	345	1	5	3.51	0.796	-0.703	0.839
Question 7	345	1	5	3.57	0.782	-0.779	1.208
Question 8	345	1	5	3.48	0.803	-0.461	0.671
Question 9	345	1	5	3.39	0.877	-0.077	0.075
Question 10	345	1	5	3.74	0.991	-0.851	0.552
Question 11	345	1	5	3.70	1.288	-0.736	-0.624
Question 12	345	1	5	3.78	1.264	-0.761	-0.531
Question 13	345	1	5	3.65	1.341	-0.577	-0.955
Question 14	345	1	5	3.89	1.176	-0.982	0.203
Question 15	345	1	5	3.80	1.175	-0.694	-0.450

Question 16	345	1	5	3.71	0.99	-0.695	0.297
Question 17	345	1	5	3.75	1.015	-0.684	0.169
Question 18	345	1	5	3.14	1.012	-0.288	-0.004
Question 19	345	1	5	3.44	1.106	-0.243	-0.640
Question 20	345	1	5	3.96	1.063	-1.010	0.568
Question 21	345	1	5	3.53	1.031	-0.514	-0.017
Question 22	345	1	5	4.06	1.157	-1.087	0.237
Question 23	345	1	5	3.87	1.114	-0.907	0.146
Question 24	345	1	5	3.92	1.033	-0.623	-0.389
Total	345	—	—	—	—	—	—

As shown in Table 1, the minimum and maximum values for all items fall within the range of 1 to 5. This indicates that no abnormal or out-of-range values were detected during the preprocessing phase. However, for further verification, boxplots should be used. Since Hair et al. (2018) emphasized that boxplots are one of the best tools for detecting outliers, the researchers followed this approach. For normality testing, one of the most commonly used tests is the Kolmogorov–Smirnov test. It must be noted, however, that this test is suitable for small samples but becomes overly sensitive when the sample size exceeds 2000. For smaller datasets, alternative normality tests may be more appropriate. According to Kovács and Steed (2007), the best comparative standard for evaluating different distributions against the normal distribution is skewness and kurtosis. Kline (2016) states that data distributions with skewness values between ±3 and kurtosis values between ±5 can be considered normally distributed. As a necessary condition, both indicators should first be examined at the item level and subsequently at the variable level for sufficiency. Based on Kline's (2016) criteria, the skewness and kurtosis values of all 24 items fall within the acceptable range, indicating that the data meet the minimum requirement for normal distribution. Additional verification of sufficient normality conditions will be addressed in Section 4–7.

As illustrated by the mean values, all variables have averages above 3, indicating that the respondents were generally consistent in their evaluations. Steven (2020) states that the standard deviation for respondents' answers to a variable should be above 0.5, which occurs only when outliers have been removed during preprocessing. If the standard deviation is below 0.5, the data are considered invalid. Furthermore, as shown in Table 1, all skewness and kurtosis coefficients remain within the acceptable ranges identified earlier. Therefore, the conditions for sufficient normality of the research data have been met, and the distribution follows the expected bell-shaped curve, allowing the researcher to proceed with parametric statistical tests.

Table 2. Descriptive Statistics of the Research Variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Std. Error (Skewness)	Kurtosis	Std. Error (Kurtosis)
Service Quality	345	1	5	3.93	0.63	-1.23	0.13	2.49	0.26
Service Cost	345	1	5	3.49	0.62	-0.83	0.13	1.46	0.26
Tourists' Perceptions	345	1	5	3.75	0.77	-1.03	0.13	0.49	0.26
Destination Competitiveness	345	1	5	3.67	0.70	-1.11	0.13	1.93	0.26
Tourist Attraction and Retention	345	1	5	3.80	0.60	-0.68	0.13	0.98	0.26
Total	345	—	—	—	—	—	—	—	—

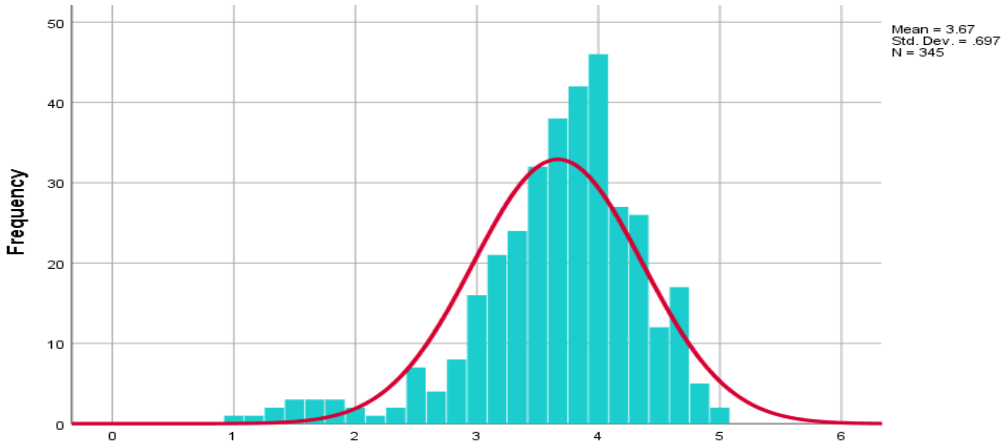

Figure 1. Tourists' Perceptions Chart

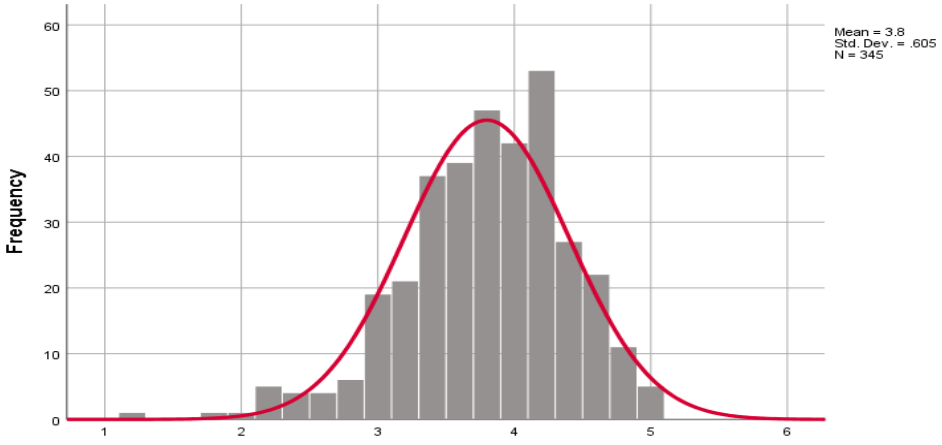

Figure 2. Tourist Attraction and Retention Chart

The collected data from the research instrument were first screened using the preprocessing criteria described earlier to ensure that any structural issues in the dataset were removed. One of the first steps involved identifying and eliminating indifferent cases—participants who failed to provide meaningful input and completed the questionnaire without paying attention to item content. In the appearance-based detection method, such respondents are identified through the inclusion of reverse and redundant items. In the formula-based method, the STDEV.P function is used for each respondent. If the standard deviation of a respondent's answers is below 0.5, the individual is classified as having extremely low response variance and must be removed from the dataset. In the present study, no respondents were eliminated based on the appearance method, and a total of 345 valid questionnaires remained in the dataset.

Another essential preprocessing task is ensuring that no two individuals have identical patterns of responses across a large number of attitudinal or preference indicators, as this may indicate unethical data collection behavior, such as replicating rows due to time or budget constraints. Therefore, statisticians emphasize performing duplicate-case screening and removing duplicated data files if detected. The present study contained no duplicate cases, and no unethical practices occurred during data collection.

Outliers represent data points that fall outside the expected target range. These may result from user input errors when entering data into software or may occur naturally. The most effective tool for detecting outliers is the boxplot, which accurately identifies values lying outside the normal score distribution.

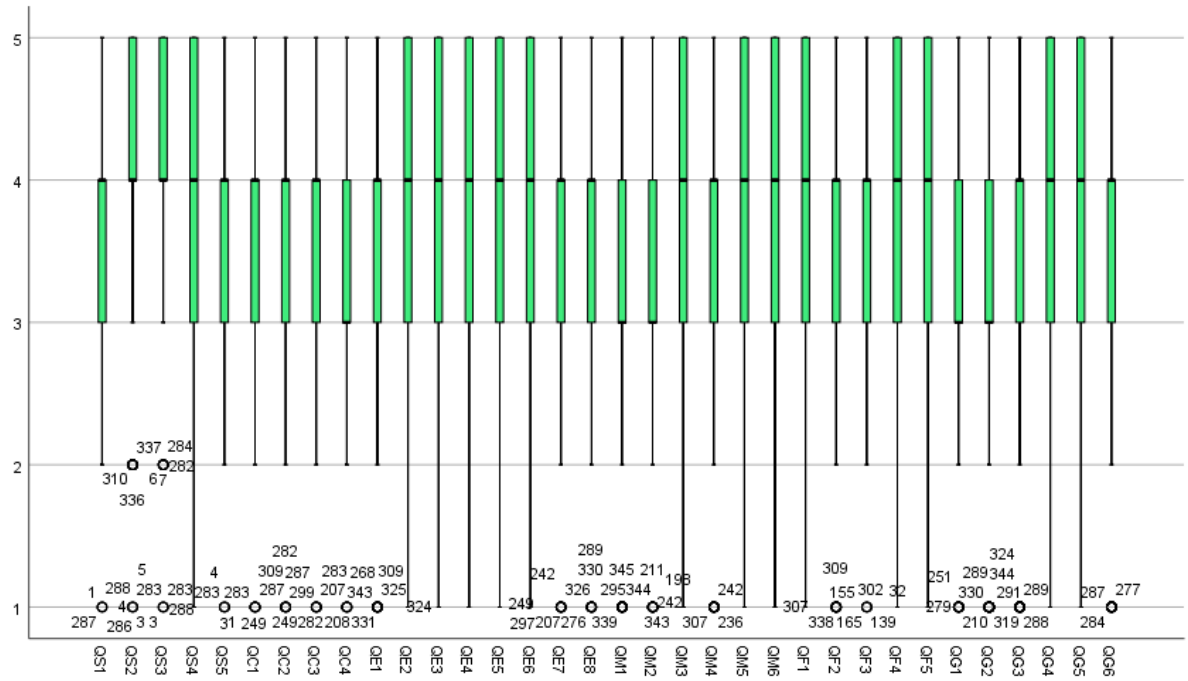

Figure 3. Boxplot for Initial Outlier Detection

Fortunately, none of the items in this study showed values outside the expected rating range; therefore, no bias toward any rating category was present.

Table 3. Cronbach's Alpha Results for Latent (Observed) Variables

Variable	Item Numbers	Cronbach's Alpha
Service Quality	1–5	0.771
Service Cost	6–9	0.703
Tourists' Perceptions	10–17	0.863
Destination Competitiveness	18–23	0.799
Tourist Attraction and Retention	24–28	0.737

All Cronbach's alpha coefficients for the six reflective variables are above the 0.7 threshold, confirming acceptable internal consistency for subsequent inferential analyses. Prior to hypothesis testing, it was also necessary to verify the normality of the variables. To test this assumption, the one-sample Kolmogorov–Smirnov test was used. If the significance level is greater than 0.05, the variable is considered normally distributed; otherwise, it is classified as non-normal. According to the results presented below, all variables are normally distributed.

Table 4. Kolmogorov–Smirnov Test Results for Normality

Variable	Sample Size	Test Statistic	P-value
Service Quality	345	0.137	0.000
Service Cost	345	0.159	0.000
Tourists' Perceptions	345	0.157	0.000
Destination Competitiveness	345	0.123	0.000
Tourist Attraction and Retention	345	0.102	0.000

Although the p-values are below 0.05, leading to a statistical conclusion of non-normality, prominent methodological scholars such as Newman (2018) and Saldana (2020) argue that skewness and kurtosis provide more meaningful criteria for determining normality—particularly in large samples. According to their guideline,

acceptable values fall within the range of –3 to +3. The skewness and kurtosis results presented earlier confirm that the data for all variables fall within acceptable thresholds, indicating that the dataset satisfies the practical conditions of normal distribution.

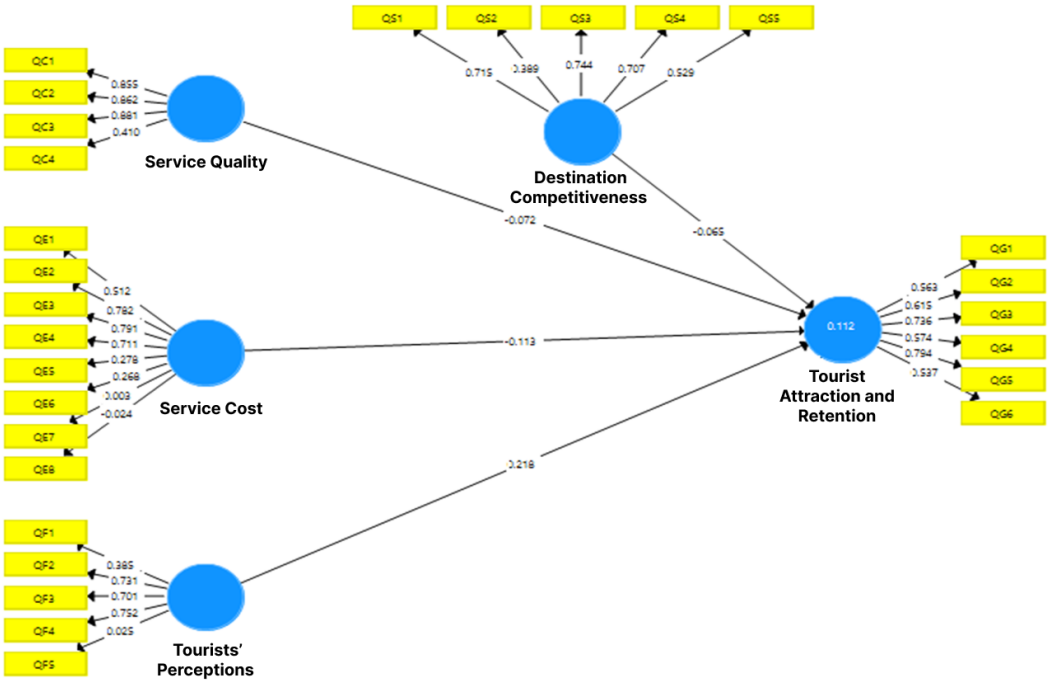

Figure 4. Initial Reflective Measurement Model (Standardized Coefficients)

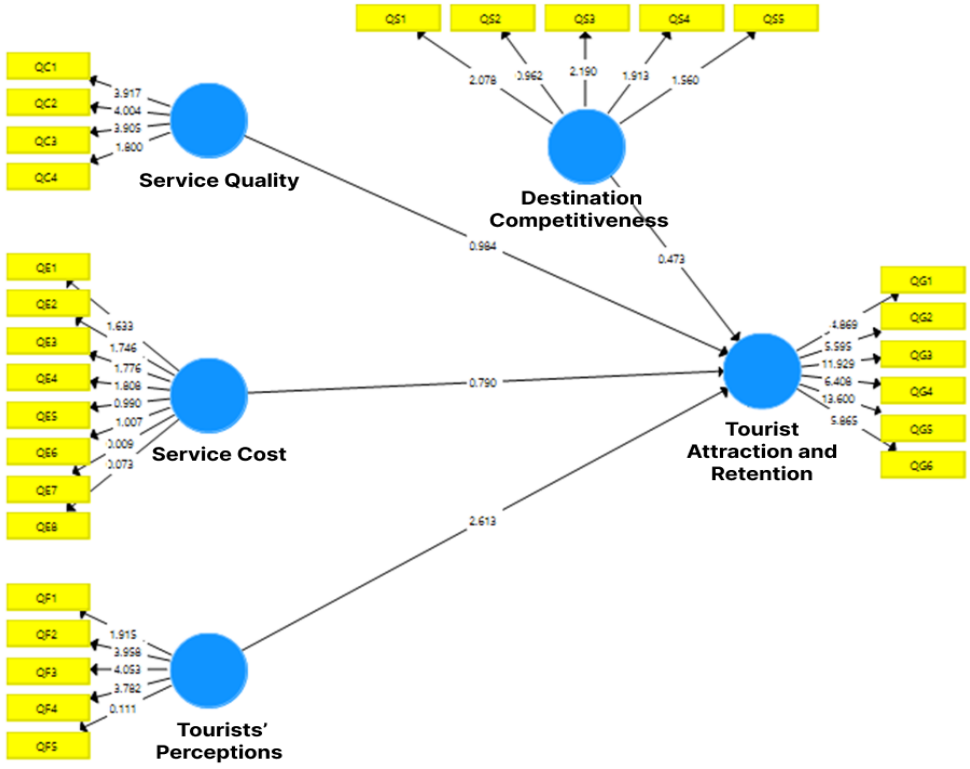

Figure 5. Significance Model (t-values)

Table 5. Factor Loadings Between Latent and Observed Variables in the Initial Reflective Measurement Model

Item	Service Quality	Service Cost	Tourists' Perceptions	Destination Competitiveness	Tourist Attraction & Retention
Question 1	0.899	—	—	—	—
Question 2	0.862	—	—	—	—
Question 3	0.881	—	—	—	—
Question 4	0.410	—	—	—	—
Question 5	—	0.912	—	—	—
Question 6	—	0.782	—	—	—
Question 7	—	0.791	—	—	—
Question 8	—	0.711	—	—	—
Question 9	—	0.278	—	—	—
Question 10	—	0.268	—	—	—
Question 11	—	0.009	—	—	—
Question 12	—	–0.024	—	—	—
Question 13	—	—	0.989	—	—
Question 14	—	—	0.791	—	—
Question 15	—	—	0.701	—	—
Question 16	—	—	0.792	—	—
Question 17	—	—	0.029	—	—
Question 18	—	—	—	0.719	—
Question 19	—	—	—	0.989	—
Question 20	—	—	—	0.744	—
Question 21	—	—	—	0.707	—
Question 22	—	—	—	0.929	—
Question 23	—	—	—	—	0.963
Question 24	—	—	—	—	0.615
Question 25	—	—	—	—	0.796
Question 26	—	—	—	—	0.974
Question 27	—	—	—	—	0.794
Question 28	—	—	—	—	0.997

Table 5 indicates that items with loadings of 0.7 or higher were retained, while items falling below this threshold were removed. Some items with factor loadings between 0.5 and 0.7 were temporarily kept in the model and will be removed in subsequent refinement steps. Accordingly, the model required modification, and the low-loading indicators were removed from the reflective outer model.

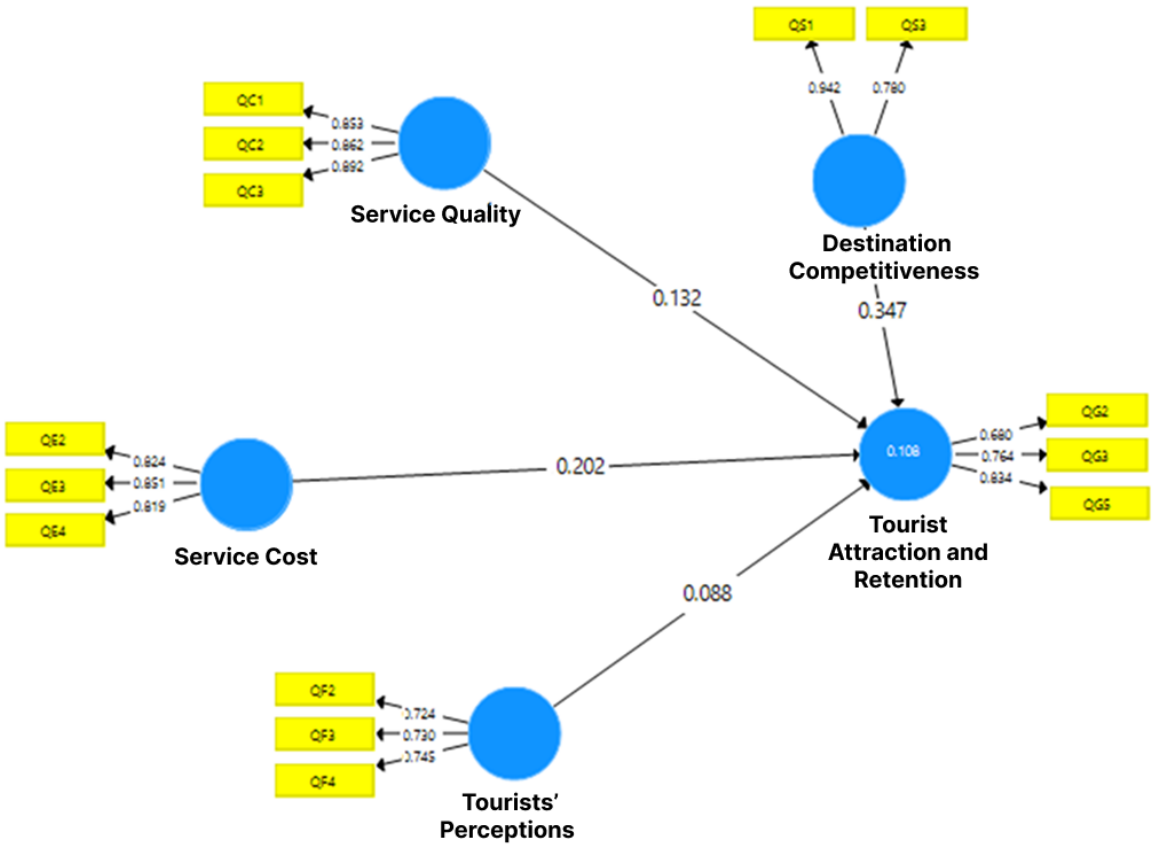

Figure 6. Modified Reflective Measurement Model (Standardized Coefficients)

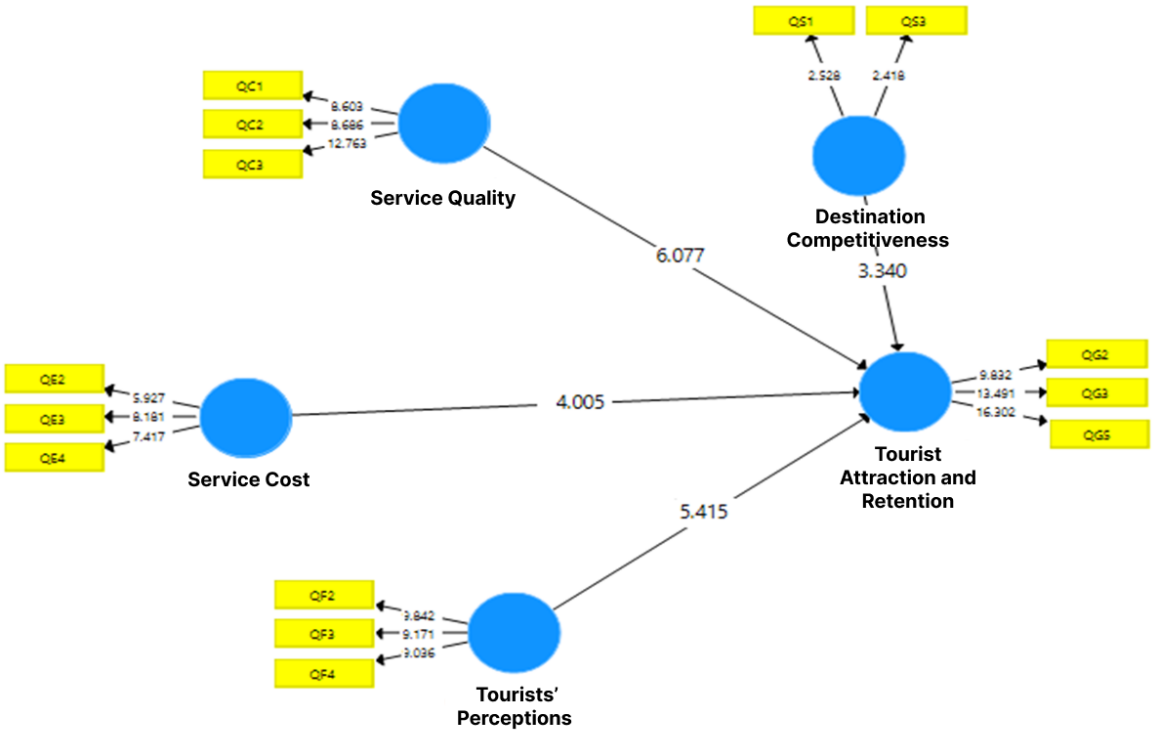

Figure 7. Modified Reflective Measurement Model (Significance Coefficients)

Cronbach's alpha coefficient is another reliability index that ranges from 0 to 1; a Cronbach's alpha value above 0.70 indicates acceptable reliability (Cronbach, 1951). However, Moss et al. (1998) suggested that for variables with a small number of items, a threshold of 0.60 may be considered the minimum acceptable level for Cronbach's alpha. The value of this coefficient for each factor has been estimated in the following table.

Table 6. Cronbach's Alpha Coefficient

Variable	Cronbach's Alpha
Service Quality	0.688
Service Cost	0.848
Tourists' Perceptions	0.778
Destination Competitiveness	0.814
Tourist Attraction and Retention	0.892

In line with the above tables, the criteria for the constructs of service quality, service cost, tourists' perceptions, destination competitiveness, and tourist attraction and retention are all above 0.70.

This criterion was introduced by Werts et al. (1974), and its advantage over Cronbach's alpha lies in the fact that composite reliability is calculated based on the correlation of indicators with their corresponding construct rather than assuming equal indicator weights. When the composite reliability value for each construct exceeds 0.70, it indicates adequate internal reliability for the measurement models, while values below 0.60 indicate a lack of reliability. It is important to note that in structural modeling, composite reliability is considered a better criterion than Cronbach's alpha because Cronbach's alpha assumes that all items for a given construct contribute equally to reliability. In contrast, composite reliability assigns greater importance to indicators with higher factor loadings. This approach makes composite reliability a more accurate and realistic measure of construct reliability compared to Cronbach's alpha.

Table 7. Composite Reliability

Variable	CR
Service Quality	0.855
Service Cost	0.903
Tourists' Perceptions	0.870
Destination Competitiveness	0.968
Tourist Attraction and Retention	0.777

Given the high composite reliability coefficients of the variables reported in the above table, the measurement models demonstrate appropriate reliability and acceptable fit.

Two criteria were used to examine the validity of the outer (measurement) model. The first criterion is convergent validity, and the second is discriminant validity.

The second criterion used to assess the fit of the measurement models is convergent validity, which evaluates the extent to which each construct correlates with its own items (indicators); the higher this correlation, the better the model fit. Fornell and Larcker (1981) introduced the Average Variance Extracted (AVE) as a criterion for assessing convergent validity and suggested a critical cutoff value of 0.50. The AVE values for each construct are presented in the table below. If the AVE for a variable is less than 0.50, the item with the lowest factor loading should be removed. As shown in the following table, since the AVE values for all variables exceed 0.50, the convergent validity of the constructs is acceptable.

Table 8. Average Variance Extracted (AVE)

Variable	AVE
Service Quality	0.748
Service Cost	0.756
Tourists' Perceptions	0.691
Destination Competitiveness	0.833
Tourist Attraction and Retention	0.537

Another important criterion used to assess discriminant validity is the comparison of the relationship between a construct and its indicators with the relationship between that construct and other constructs. Acceptable discriminant validity indicates that a construct is more strongly associated with its own indicators than with other constructs. Discriminant validity is considered acceptable when the AVE for each construct is greater than the shared variance between that construct and other constructs (i.e., the squared correlation between constructs). This is examined using a matrix whose cells contain the correlation coefficients between constructs and the square roots of the AVE values for each construct. In this matrix, the main diagonal is first set to 1; then, the values on the main diagonal are replaced by the square roots of the AVE values, and finally, the table is presented.

Table 9. Fornell–Larcker Criterion

	Service Quality	Service Cost	Tourists' Perceptions	Destination Competitiveness	Tourist Attraction & Retention
Service Quality	0.869				
Service Cost	0.319	0.831			
Tourists' Perceptions	-0.017	0.023	0.733		
Destination Competitiveness	-0.132	-0.136	0.273	0.762	
Tourist Attraction & Retention	0.122	0.074	0.056	0.066	1.000

As shown in the table derived from the Fornell and Larcker (1981) method, the square root of AVE for the latent variables in this study, represented on the main diagonal of the matrix, is greater than the correlations between each construct and the other constructs listed in the cells below and to the left of the main diagonal. Therefore, it can be stated that the latent variables in the model have stronger relationships with their own indicators than with other constructs, and the discriminant validity of the model is at an acceptable level.

Table 10. Path Coefficients Between Constructs and Their Corresponding Components

Hypothesis	Path Coefficient (β)	P-value	t-value	Interpretation
Service quality of specialized medical centers has a quantitative and qualitative effect on tourist attraction and retention.	0.132	0.000	6.077	Not significant
Service cost of specialized medical centers has a quantitative and qualitative effect on tourist attraction and retention.	0.202	0.000	4.005	Not significant
Tourists' perceptions of specialized medical centers have a quantitative and qualitative effect on tourist attraction and retention.	0.088	0.000	5.415	Significant
Destination competitiveness (the city of Mashhad) has an effect on tourist attraction and retention.	0.347	0.005	3.340	Not significant

Hypothesis 1: The service quality of specialized medical centers has a quantitative and qualitative effect on tourist attraction and retention. Based on the results, the path coefficient (β) is 0.132, which means that a one-unit increase in service quality in specialized medical centers leads to a 0.132-unit change in tourist attraction and retention in the same direction. Given the p-value of 0.000 and a t-value of 6.077, this hypothesis is regarded as

not significant. Therefore, it can be concluded that the service quality of specialized medical centers has a positive but non-significant effect on tourist attraction and retention.

Hypothesis 2: The service cost of specialized medical centers has a quantitative and qualitative effect on tourist attraction and retention. The path coefficient (β) of 0.202 indicates that a one-unit increase in service cost results in a 0.202-unit change in tourist attraction and retention in the same direction. Considering the p-value of 0.000 and a t-value of 4.005, this hypothesis is also considered not significant. Thus, the service cost of specialized medical centers has a positive but non-significant effect on tourist attraction and retention.

Hypothesis 3: Tourists' perceptions of specialized medical centers have a quantitative and qualitative effect on tourist attraction and retention. The path coefficient (β) is 0.088, indicating that a one-unit change in tourists' perceptions leads to a 0.088-unit change in tourist attraction and retention in the same direction. With a p-value of 0.000 and a t-value of 5.415, this hypothesis is considered significant. Therefore, tourists' perceptions of specialized medical centers have a positive and significant effect on tourist attraction and retention.

Hypothesis 4: Destination competitiveness (the city of Mashhad) has an effect on tourist attraction and retention. The path coefficient (β) is 0.347, indicating that a one-unit increase in destination competitiveness leads to a 0.347-unit change in tourist attraction and retention in the same direction. However, with a p-value of 0.005 and a t-value of 3.340, this hypothesis is considered not significant. Hence, destination competitiveness (the city of Mashhad) has a positive but non-significant effect on tourist attraction and retention.

Table 11. R Square (Coefficient of Determination)

Endogenous Variable	R square	R square adj
Tourist Attraction and Retention	0.102	0.095

Based on the R square values related to the first structural equation and comparing them with the three reference values proposed by Chin (2010), it is evident that the four variables—service quality, service cost, tourists' perceptions, and destination competitiveness—with a coefficient of determination of 0.108, weakly predict the behavior of the endogenous variable "tourist attraction and retention."

In this section, the researcher, in line with the model fit literature that aims to match the observed data in the sample with the reality of the population, first calculates the SRMR index in the software and compares it with the cutoff value of 0.08. Ringle and Sarstedt (2016) argue that if this index is smaller than the corresponding cutoff, the overall model fit is acceptable. In addition, the view of Tenenhaus and colleagues regarding the geometric mean of the inner and outer model remains valid. The SRMR index was equal to 0.074, which is less than the specified cutoff; therefore, the researcher can conclude that the model has an acceptable fit and that the sample observations are consistent with the underlying reality.

In addition to the perspective of Tenenhaus and colleagues, the GOF (Goodness of Fit) criterion, defined as the geometric mean of the average R square of endogenous variables and the average communality of the research variables, was also used. Wetzels et al. (2009) introduced three values—0.01, 0.25, and 0.36—as weak, medium, and strong thresholds for overall model quality according to the GoF index.

$$GoF = \sqrt{(0.55 \times 0.32)}$$

which equals:

$$GoF = 0.419$$

Given that the GoF value is much higher than 0.36, it can be concluded that the overall research model has very good quality, or in traditional terms, a very good fit, and that the hypothesis tests have been conducted with approximately 97% precision in terms of covariance-based criteria.

Discussion and Conclusion

The purpose of the present study was to investigate the role of value-proposition differentiation—including service quality, service cost, tourists' perceptions, and destination competitiveness—on the attraction and retention of medical tourists in Mashhad. The results demonstrated that among the four variables examined, tourists' perceptions were the only significant predictor of tourist attraction and retention, while service quality, service cost, and destination competitiveness exerted positive but non-significant effects. Interpreting these findings within the broader literature on medical tourism provides important conceptual and managerial insights.

First, the finding that *service quality* did not significantly predict attraction and retention, despite its positive coefficient, appears counterintuitive in light of dominant theoretical frameworks in medical tourism. Many prior studies have emphasized that high-quality clinical services, safety, accreditation, professional expertise, and treatment outcomes are central determinants of medical tourists' preferences and loyalty (1, 2). One possible explanation is that in destinations such as Mashhad—where multiple medical centers provide relatively standardized and acceptable clinical services—the variability in service quality may not be large enough to create meaningful differentiation. When quality levels converge across competing providers, medical tourists may shift attention from clinical excellence to *value-added* factors such as communication quality, hospitality, cultural compatibility, transparency of costs, and post-treatment follow-up. Similar dynamics are reported in studies showing that mature medical tourism markets often reach a "quality plateau," reducing the marginal effect of quality on behavioral outcomes (12, 14). Therefore, while quality remains foundational, it may no longer serve as the decisive competitive lever in contexts where baseline standards are already met.

Second, the insignificance of *service cost* challenges the widely held belief that affordability is the strongest driver of medical travel in developing countries. Many regional analyses—including those focused on Iran, Southeast Asia, and the Gulf region—highlight competitive pricing as a strategic advantage in health tourism (5, 8, 10). However, the current study suggests that although cost is relevant, it may not independently drive attraction or retention. Several explanations are plausible. Medical tourists may evaluate costs relative to perceived benefits rather than as an absolute determinant, especially when treatment involves high-risk, high-value procedures. Furthermore, Mashhad's medical market may already operate within a reasonably narrow cost range, leading tourists to prioritize reliability, reputation, and trust over marginal price differences. Prior findings also indicate that low costs without corresponding improvements in transparency, service coordination, or digital engagement do not generate sustainable competitive advantage (6, 9). Thus, cost competitiveness alone appears insufficient to influence tourist retention behavior in contemporary health tourism ecosystems.

Third, *tourists' perceptions*—the only significant predictor—emerged as a crucial determinant of attraction and retention. This finding underscores the importance of experiential, emotional, and cognitive evaluations in shaping tourist decisions. Perceptions include trust in medical professionals, feelings of safety, satisfaction with communication, clarity of processes, perceived cultural compatibility, and overall service experience. Studies consistently confirm that positive perceptions strongly predict return intentions, word-of-mouth recommendations, and destination loyalty in medical tourism (4, 17, 18). These findings align with contemporary service-dominant logic

(SDL), which views value not as a product feature but as a co-created experience shaped by interactions, expectations, and meanings. In this perspective, tourists judge value through their lived encounters rather than objective indicators of performance. The present findings strengthen the argument that medical tourism organizations must invest not only in technical excellence but also in communication, empathy, cultural sensitivity, emotional reassurance, and service personalization.

Fourth, the results showed that *destination competitiveness*—despite having the highest path coefficient—was statistically non-significant. This is surprising given that destination attractiveness, accessibility, safety, infrastructure, and tourism amenities are well-established components of medical tourism competitiveness frameworks (7, 13). Mashhad, as a unique religious and cultural hub, benefits from strong tourism inflows and existing hospitality infrastructure; however, these advantages may not necessarily translate into competitive distinction in the medical domain. One possibility is that tourists differentiate between the destination as a leisure attraction and the destination as a healthcare provider. Another explanation is that infrastructural or administrative gaps—such as lack of integrated medical tourism portals, inconsistent digital information, or limited coordination between hotels and hospitals—may weaken the translation of destination competitiveness into sustained tourist retention. Similar inefficiencies have been documented in other regional studies (12, 16). These findings suggest that medical tourism competitiveness is not a direct extension of general tourism attractiveness but requires specialized governance mechanisms.

An integrative reading of these results supports the idea that the future of medical tourism competitiveness in Iran depends more on experiential, relational, and digital value propositions than on traditional cost-quality paradigms. As global competition intensifies, destinations must shift toward differentiated service ecosystems that enhance trust, reduce uncertainty, and provide seamless, patient-centered experiences. Several studies align with this claim, noting that digital transformation, data-driven personalization, and integrated service platforms increasingly shape medical tourist choices (9-11). The results also resonate with the international literature emphasizing that patient empowerment, transparent communication, and holistic wellness experiences are becoming more decisive than conventional clinical attributes (1, 2).

Moreover, the relatively low R^2 value indicates that additional variables—such as digital marketing effectiveness, international accreditation, branding, service integration, and cultural mediation—may play important roles in shaping attraction and retention outcomes. Prior studies confirm that digital branding, online trust-building, and social media engagement profoundly influence health tourist decisions, particularly in competitive regional markets (5, 17). These omitted variables represent crucial areas for future development and research.

In summary, the findings show that perception-based factors dominate structural or economic predictors in shaping medical tourism behavior in Mashhad. Improving medical tourist experiences, building trust, and enhancing communication appear far more impactful than simply offering competitive prices or emphasizing destination appeal. This reaffirms the global shift toward experience-driven medical tourism, where emotional assurance, digital clarity, and personalized value propositioning define competitive advantage.

This study faced several methodological and contextual limitations. First, the data were collected from medical tourists present in Mashhad during a specific timeframe, which may limit seasonal or situational generalizability. Second, the quantitative design inherently constrains the depth of psychological, cultural, and experiential nuances that shape tourist perceptions and decision-making. Third, the cross-sectional nature of the research restricts causal interpretations, particularly concerning long-term retention. Fourth, several potential influencing variables—such as

digital information quality, branding strategies, cultural facilitation services, and international accreditation—were not included in the model, reducing explanatory power. Finally, the study relied on self-reported data, which may introduce biases such as social desirability or recall error.

Future research should incorporate mixed-method designs to capture both the measurable and experiential dimensions of medical tourism behavior. Longitudinal studies are recommended to track retention patterns over time and to understand dynamic decision-making among medical tourists. Including additional variables—such as digital service quality, integrated care pathways, online trust signals, international certifications, cultural mediation, and emotional support services—would enhance model explanatory power. Comparative studies across different Iranian cities or international destinations could reveal structural differences in competitiveness and value proposition strategies. Finally, exploring the role of artificial intelligence, personalized digital platforms, and predictive analytics in shaping medical tourist engagement remains a promising avenue.

Medical centers in Mashhad should prioritize enhancing patient perceptions through empathetic communication, transparent information sharing, and personalized support throughout the treatment journey. Strengthening digital presence—including multilingual websites, integrated service platforms, and real-time communication channels—can significantly improve trust and decision-making. Collaboration between hospitals, hotels, travel agencies, and city administrators is essential for creating seamless end-to-end experiences that meet the holistic needs of medical tourists.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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