HMIS
Health Management and Information Science

Original Article

Driving Global Medical Tourism Growth: A Validated Marketing Model for Sustainable Development in East Azerbaijan Province, Iran

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Abstract

Introduction: Medical tourism is a rapidly growing sector in the global tourism industry, driving nations to develop strategic plans to capitalize on its potential. This study aimed to design and validate a marketing model tailored to medical tourism in East Azerbaijan Province, Iran, to support sustainable growth in this sector.

Methods: A mixed-methods approach was employed, divided into two phases. The first phase used Sandelowski and Barroso's (2007) meta-synthesis methodology to identify key components of medical tourism marketing. The second phase validated the model through content validity, reliability, and construct validity assessments. A questionnaire based on the model's components was completed by 382 foreign tourists visiting East Azerbaijan for health services, selected via census sampling. Statistical analyses were conducted using Excel 2016, AMOS, and SPSS version 21.

Results: The model comprised five dimensions, ten components, and forty items. Content Validity Ratio (CVR) exceeded 0.62, with Content Validity Index (CVI) and modified kappa values of 0.91 (relevance) and 0.92 (clarity). Cronbach's alpha (>0.7) confirmed strong reliability. Confirmatory Factor Analysis (CFA) supported a five-factor structure: quality of services, price, development of tourism and medicine, facilities and equipment, and information technology. Fit indices were suitable (CFI=0.91, CMIN/DF=2.923, RMSEA=0.078).

Conclusion: The validated model is suitable for medical tourism marketing and can guide East Azerbaijan officials in enhancing health tourism development, attracting foreign tourists, and improving promotional efforts. This study contributes to the growing body of knowledge on sustainable medical tourism strategies, offering a framework for global application.

Keywords: Tourism, Tourism marketing, Medical tourism, Health tourism

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Introduction

Tourism is recognized as a high-priority industry with substantial global significance. (1). Within this context, medical tourism has emerged as a critical component, driving the rapid expansion of health tourism and healthcare services worldwide (2). Regions such as East Asia and the Middle East have become key destinations for medical tourism, with countries like Thailand leading the market by capturing 38% of this rapidly growing sector (3). The rise in physical and mental health issues associated with modern lifestyles has further amplified the demand for health tourism (4). At a macroeconomic level, governments increasingly focus on leveraging the social and economic benefits of the medical tourism industry (5). This has intensified competition among nations, particularly developing countries, to attract medical tourists. Despite its considerable potential, Iran has yet to fully capitalize on the opportunities presented by medical tourism, as the responsible authorities have not prioritized its development (6).

Medical tourism is experiencing rapid global growth, drawing significant attention from organizations and nations focused on tourism development (7). The demands of modern

lifestyles have spurred a notable trend among individuals, regardless of income levels, toward prioritizing fitness, natural remedies, pain alleviation, stress reduction, and overall well-being (8). Mineral springs and their therapeutic waters have emerged as popular tourist destinations, offering recreational enjoyment and health benefits, supported by facilities promoting relaxation and wellness(9). Economic factors also play a crucial role in the rise of medical tourism, with countries like Iran seeking to address a significant portion of healthcare needs through medical services and tourism (10). The potential revenue from medical tourism, estimated at $50 billion annually for treatments in European and American countries, has motivated Asian nations such as Singapore, Thailand, and India to actively market their medical services globally (11). Capturing a share of this expenditure could have a transformative impact on the tourism economies of Asian countries (3).

It is essential to highlight that, despite its substantial potential, the development of health tourism in Iran has not been adequately prioritized by the relevant authorities (12). Medical tourism involves multiple stakeholders, requiring improved coordination among various entities. Key organizations such as the Cultural Heritage, Handicrafts, and Tourism Organization, the Ministry of Health, Treatment, and Medical Education, the Ministry of Foreign Affairs, and the Ministry of Welfare each play a role in decision-making within their respective areas of responsibility. The Health Tourism Policy Council, overseen by the Deputy of Tourism within the Cultural Heritage, Handicrafts, and Tourism Organization, is actively engaged in this sector (13, 14).

The Health Tourism Headquarters of the Cultural Heritage, Handicrafts, and Tourism Organization actively engages in numerous initiatives to advance health tourism. They have formulated a comprehensive strategic plan to guide key policies in medical tourism, emphasizing the utilization of the healthcare system's capabilities, the establishment of effective international marketing mechanisms, and the development of medical tourism infrastructure (15). The organization participates in international exhibitions, particularly in the Persian Gulf region, and is working on a comprehensive "Medical Tourism Safety" plan. Additionally,

efforts are underway to create infrastructure for tourist insurance, conduct studies on hydrotherapy centers, and attract investments for their development. The organization recognizes strong competitors in the medical tourism sector, such as India, Singapore, Dubai, and Jordan, which are actively working to attract patients from Asian countries. Notably, India stands out as a leading destination in medical tourism, anticipating significant revenue growth with an annual increase of 30% (15, 16).

The vision document highlights the need for Iran to position itself as a regional hub for health tourism, emphasizing the importance of fundamental measures to shift the country's current perspective on health tourism (17). Social marketing can build credibility, foster a positive reputation, and create a favorable image among potential health tourists. By leveraging social marketing strategies, Iran can enhance its appeal as a desirable destination for health tourism (18). However, the tourism industry in Iran faces numerous challenges, necessitating the development of a medical tourism marketing model that aligns with the cultural characteristics of Islamic Iran (19). This study aims to address these challenges by proposing such a model.

Beyond survival and profitability, a critical concern for Iran's tourism industry is the development of marketing strategies that adapt to evolving environmental conditions and crises (20). Marketers argue that the sustainability of businesses depends on their ability to identify and align with environmental factors while navigating the complexities of the current turbulent landscape (21). These competencies are essential for organizations to formulate effective marketing strategies, achieve competitive advantage, and drive growth (22, 23).

While international models, such as those by Moghavvemi et al. (2017) (22), Beladi et al. (2015) (21), Runnels and Carrera (2012) (24), and Suthin et al. (2007) (25), have been developed outside Iran, and domestic studies, such as Haji Nezhad et al. (2016) (26) Titled "Strategic Planning for Medical Tourism with an Emphasis on Religious Tourism in Mashhad," have identified influential factors in medical tourism marketing, no research has specifically addressed the design of a medical tourism marketing model tailored to Iran's tourism industry. Given the global growth of medical tourism and its potential for

sustainable development, this study aims to fill this gap by developing and validating a medical tourism marketing model for East Azerbaijan Province, Iran. By focusing on this region, the study seeks to provide a framework that drives global medical tourism growth while promoting sustainable development in the local tourism industry.

Materials and Methods

The present study was structured using a mixed-methods approach and divided into two phases, each comprising multiple steps. Specifically, an exploratory mixed-methods design was employed, integrating both qualitative and quantitative phases. The first phase focused on generating items and developing a conceptual model, while the second phase aimed to refine the items and evaluate their psychometric properties. Given that this research involves designing and constructing a new model for medical tourism marketing in East Azerbaijan Province, it is considered applied research in terms of its nature and objectives. Before data collection at each stage of the study, informed consent was obtained from all participants, and the study's objectives were communicated to them.

Phase I: The Meta-Synthesis Method

This phase involved implementing the seven-stage meta-synthesis process, as outlined by Sandelowski and Barroso, to extract categories, concepts, and codes related to medical tourism marketing from theoretical foundations and prior research (27). Meta-synthesis requires researchers to conduct an in-depth review and integration of findings from related qualitative studies. By analyzing the findings of primary research articles, researchers can uncover insights that provide a broader perspective on the phenomenon. Similar to systematic reviews, this method yields results greater than the sum of individual findings, offering a more holistic understanding. This study employed the seven-step approach by Sandelowski and Barroso (2007) to achieve this goal. The steps are illustrated in Figure 1. For further details on the qualitative methodology, refer to the published article (28). The meta-synthesis process focuses on qualitative studies that may not include extensive theoretical foundations, creating an interpretive synthesis of findings rather than a comprehensive

summary. By systematically combining qualitative research, meta-synthesis uncovers new fundamental themes, enhancing current knowledge and providing a comprehensive perspective. This approach allows researchers to understand medical tourism marketing more deeply, contributing to developing a conceptual model tailored to the context of East Azerbaijan Province, Iran.

Phase II: Content validity, Reliability, Construct Validity of the Proposed Model, and Conducting a Survey Study

This phase, conducted as a quantitative study, included content validity, reliability, and construct validity assessments, followed by a survey study.

Content Validity

To confirm the content validity of the items and domains identified in the previous phase, a panel of experts in the field of medical tourism was assembled. While no fixed number of experts is required, including at least five members is recommended to minimize the chance of agreement by coincidence. In this study, the initial questionnaire, developed based on the outputs of the meta-synthesis phase, was sent to 10 selected experts in medical tourism. The panel included key stakeholders from the medical tourism industry in East Azerbaijan Province, such as representatives from the Cultural Heritage,
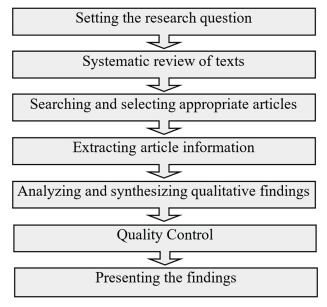

Figure 1: Sandelowski and Barros's (2007) seven-step meta-synthesis process

Handicrafts, and Tourism Organization, as well as the Health Tourism Department of the University of Medical Sciences. Participants were selected using a purposive sampling approach.

The content validity ratio (CVR) for each item was calculated by asking experts to rate the necessity of each item on a three-point Likert scale: "necessary," "useful but not necessary," or "not necessary." The CVR ranges from -1 to 1, with higher scores indicating greater agreement among experts about the essential nature of the item. The formula for CVR is:

CVR=(Ne−N/2)/N/2

N is the number of experts who rated the item as "necessary," and N is the total number of panel members. Using Lawshe's table, a CVR greater than 0.62 was considered acceptable for this study, given the participation of 10 experts.

Content validity was further evaluated using the modified kappa coefficient (modified CVI). This involved assessing whether the questionnaire content effectively measured the intended goals and evaluating the clarity and relevance of each item. Experts were also invited to provide feedback or suggestions to improve the quality of the questions. The content validity index (CVI) and modified Kappa were calculated for the overall questionnaire and individual items (30, 31).

The probability of chance agreement (PC) was calculated for each item using the formula:

PC [N!/A! (N-A)!]*. 5N.

where N represents the number of experts, and A represents the number of experts who agreed on the item.

After calculating the item-level CVI (I-CVI) for all items, the kappa statistic was computed using the formula:

$K=(I\text{-}CVI\text{-}P_C)/(1\text{-}P_C)$.

Kappa values were interpreted based on the guidelines by Cicchetti, Sparrow, and Fleiss (1981): Excellent agreement: $\kappa > 0.74$, Good agreement: $\kappa = 0.60\text{–}0.74$, and Fair agreement: $\kappa = 0.40\text{–}0.59$ (29).

Reliability

The reliability of the questionnaire was assessed using internal consistency and test-retest reliability methods. Internal consistency, measured by Cronbach's alpha coefficient, ranges between 0 and 1, with values ≥ 0.70 indicating satisfactory reliability (30).

Test-retest reliability was estimated using intraclass correlation coefficients (ICCs) calculated from responses provided by 30 health tourists for the total scale and each subscale. The ICC interpretation guidelines are as follows: Small: 0.00–0.20, Fair: 0.21–0.40, Moderate: 0.41–0.60, Significant: 0.61–0.80, and Almost Complete: 0.81–1.00 (31).

Population and Statistical Sample/Construct Validity

In 2018, according to data from the General Department of Cultural Heritage, Tourism, and Handicrafts of East Azerbaijan Province, approximately 80,000 people traveled to Tabriz, of which 382 were health tourists seeking medical services. The sampling method employed was a census approach. The statistical population for the survey phase included medical tourists who traveled to Tabriz for treatment in 2018. The sample size for the medical tourists' statistical population was 382. Construct validity was assessed using factor analysis. Data were analyzed using SPSS software version 21. Descriptive statistics, such as frequency, percentage, and mean, were used to summarize the data. Confirmatory Factor Analysis (CFA) was performed to validate the factor structure, with model fit indices such as Chi-square (χ^2), Chi-square/degree of freedom ratio, Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Root Mean Square Error of Approximation (RMSEA) used to confirm the model (32). The acceptable ranges for these fit indices are presented in Table 1. This comprehensive approach ensured the robustness of the questionnaire and the validity of the proposed model, providing a solid foundation for further analysis and application in medical tourism marketing.

Results

The findings of this study are presented in two phases: qualitative (meta-synthesis) and quantitative (survey).

Results of the Qualitative Phase

In the first phase, the seven-step meta-synthesis method by Sandelowski and Barroso was employed. All dimensions, components, and indicators extracted from prior studies were initially coded. These codes were then analyzed, and similar codes were grouped into broader concepts (themes). These concepts were further categorized into more general classes referred to

Table 1: Reliability of categories and concepts of medical tourism marketing questionnaire

Concepts	Cronbach's alpha value
Quality of medical and tourism services	0.701
The price of medical and tourism services	0.708
Development of medical tourism	0.723
Medical and tourism facilities and equipment	0.777
Information and Communications Technology	0.880

as dimensions. As a result, the research model comprised five dimensions, 10 components, and 40 indicators, forming a comprehensive framework for the medical tourism marketing model. The five main dimensions include:
1. Quality of medical and tourism services
2. Price of medical and tourism services
3. Development of tourism and medicine
4. Medical and tourism facilities and equipment
5. Information and communication technology

For more detailed findings from the meta-synthesis phase, refer to the published article (33).

Results of the Quantitative Phase:
Sample Characteristics: The study included 382 health tourists who visited healthcare centers in northwestern Iran for medical services. The average age of participants was 34.96 years (SD=1.454). Among the participants, 128 (33.50%) were women, and 254 (66.50%) were men. Regarding marital status, 117 (30.63%) were single, and 265 (69.37%) were married. The participants were citizens of Azerbaijan (156, 40.83%), Türkiye (65, 17%), Armenia (76, 19.89%), and Iraq (85, 22.25%) (See Table 2 for details).

Content Validity
All items in the questionnaire had a Content Validity Ratio (CVR) above 0.62, indicating that all questions were deemed essential by the expert panel (with 10 experts, the threshold CVR was 0.62). The questionnaire's content validity was assessed using qualitative (expert feedback) and quantitative methods. The Content Validity Index (CVI) and modified Kappa were 0.88 and 0.88 for relevance, 0.89 and 0.89 for clarity, respectively. Based on expert recommendations, 10 questions were modified without removing any items (See Table 3 for details).

Reliability
The reliability of the questionnaire was evaluated using internal consistency (Cronbach's alpha) and test-retest reliability (intraclass correlation coefficients, ICCs). Both measures demonstrated satisfactory reliability. (See Table 4 for details).

Construct Validity
First-order confirmatory factor analysis (CFA) confirmed the fit of the measurement model. Second-order CFA was then used to evaluate the structural part of the conceptual model. The results indicated a good fit for the data with the following indices:
- Comparative Fit Index (CFI)=0.91
- Parsimony Comparative Fit Index (PCFI)=0.746
- Parsimony Normed Fit Index (PNFI)=0.756
- Chi-square/Degrees of Freedom (CMIN/DF)=2.923
- Root Mean Square Error of Approximation (RMSEA)=0.078
- Adjusted Goodness of Fit Index (AGFI)=0.865
- Goodness of Fit Index (GFI)=0.86

Table 2: Distribution of demographic characteristics of medical tourists in northwest Iran

Demographic information	Frequency	Percentage (%)
Gender		
Male	254	66.50%
Female	128	33.50%
Country		
Azerbaijan	156	40.83%
Türkiye	65	17%
Armenia	76	19.89%
Iraq	85	22.25%
Marital status		
Single	117	30.63%
Married	265	69.37%

Table 3: The CVR, CVI, and modified Kappa for each question

Dimensions and questions	Essential			Relevance				Clarity			
	Ne[a]	CVR[b]	Interpretation	Number giving rating of 3 or 4 to relevancy of item	CVI	p_c [c]	Modified Kappa (Modified CVI)	The number giving a rating of 3 or 4 to clarify the item	CVI	p_c [d]	Modified Kappa (Modified CVI)
Quality of medical and tourism services											
Q 1	10	1	Remained	8	0.8	0.043	0.79	9	0.9	0.009	0.89
Q 2	10	1	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 3	10	1	Remained	8	0.8	0.043	0.79	9	0.9	0.009	0.89
Q 4	9	0.8	Remained	9	1	0.001	1	9	0.9	0.009	0.89
Q 5	10	1	Remained	8	0.8	0.043	0.79	9	0.9	0.009	0.89
Q 6	10	1	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
The price of medical and tourism services											
Q 7	10	1	Remained	8	0.88	0.017	0.88	8	0.88	0.017	0.88
Q 8	9	0.8	Remained	9	1	0.001	1	9	1	0.001	1
Q 9	10	1	Remained	9	0.9	0.009	0.89	8	0.88	0.017	0.88
Q 10	10	1	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 11	9	0.8	Remained	9	1	0.001	1	9	1	0.001	1
Q 12	10	1	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 13	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 14	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 15	10	1	Remained	8	0.88	0.017	0.88	9	0.9	0.009	0.89
Q 16	10	1	Remained	8	0.88	0.017	0.88	9	1	0.001	1
Development of medical tourism											
Q 17	9	0.8	Remained	8	0.88	0.017	0.87	8	0.8	0.043	0.79
Q 18	9	0.8	Remained	9	0.9	0.009	0.89	9	1	0.001	1
Q 19	10	1	Remained	8	0.8	0.043	0.79	7	0.87	0.031	0.87
Q 20	9	0.8	Remained	7	1	0.007	1	8	0.88	0.017	0.87
Q 21	9	0.8	Remained	8	0.88	0.017	0.87	8	0.8	0.043	0.79
Q 22	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 23	9	0.8	Remained	9	0.9	0.009	0.89	8	0.88	0.017	0.88
Q 24	9	0.8	Remained	8	0.88	0.017	0.88	9	0.9	0.009	0.89
Medical and tourism facilities and equipment											
Q 25	10	1	Remained	8	0.88	0.017	0.87	9	0.9	0.009	0.89
Q 26	10	1	Remained	9	1	0.001	1	9	1	0.001	1
Q 27	10	1	Remained	8	0.88	0.017	0.88	9	1	0.001	1
Q 28	9	0.8	Remained	8	0.88	0.017	0.88	9	0.9	0.009	0.89
Q 29	10	1	Remained	9	0.9	0.009	0.89	9	1	0.001	1
Q 30	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 31	9	0.8	Remained	8	0.88	0.017	0.88	8	0.8	0.043	0.79
Q 32	9	0.8	Remained	9	0.9	0.009	0.89	9	1	0.001	1
Information and Communications Technology											
Q 33	10	1	Remained	8	0.88	0.017	0.88	9	1	0.001	1
Q 34	9	0.8	Remained	8	0.88	0.017	0.88	8	0.88	0.017	0.88
Q 35	10	1	Remained	8	0.8	0.043	0.79	8	0.88	0.017	0.88
Q 36	9	0.8	Remained	8	0.88	0.017	0.88	8	0.8	0.043	0.79
Q 37	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 38	9	0.8	Remained	9	0.9	0.009	0.89	9	0.9	0.009	0.89
Q 39	10	1	Remained	8	0.88	0.017	0.87	9	1	0.001	1
Q 40	10	1	Remained	8	0.8	0.043	0.79	8	0.88	0.017	0.88

[a]Several experts evaluated the item's essential; [b]CVR or Content Validity Ratio = (Ne-N/2)/(N/2) with 10 people at the expert panel (N = 10), the items with a CVR bigger than 0.62 remained at the instrument, and the rest eliminated; [c]CVI or Content Validity Index; [d]pc (probability of a chance occurrence) was computed using the formula: pc = [N!/A! (N-A)!]

Table 4: Cronbach's alpha and reliability of test-retest

Dimensions	Number of items	Cronbach's alpha	Internal consistency reliability	ICC* (95%confidence interval)	Test-retest reliability
Quality of medical and tourism services	6	0.98	Excellent	0.98 (0.43-0.89)	Excellent
The price of medical and tourism services	10	0.70	Appropriate	0.77 (0.01-0.97)	Appropriate
Development of medical tourism	8	0.98	Excellent	0.98 (0.43-0.89)	Excellent
Medical and tourism facilities and equipment	8	0.81	Appropriate	0.95 (0.79-0.92)	Excellent
Information and Communications Technology	8	0.84	Appropriate	0.93 (0.82-0.97)	Excellent

These results confirmed the goodness of fit for the final model. The acceptable ranges for CFA fit indices are presented in Table 1. The final model of medical tourism marketing is illustrated in Figure 2.

This comprehensive analysis validated the proposed model, demonstrating its applicability and robustness in the context of medical tourism marketing in East Azerbaijan Province, Iran.

Discussion

The significance of the research topic, coupled with a thorough literature review and prior studies, highlighted the necessity of designing a marketing model tailored to medical tourism in East Azerbaijan. Initial investigations revealed a lack of consensus among researchers regarding the definition, types, and dimensions of medical tourism marketing. This inconsistency was attributed to insufficient attention to the multifaceted nature of medical tourism marketing, a relatively new and expansive concept in marketing and tourism management. Given the breadth of research in this area, the likelihood of developing a comprehensive model applicable to East Azerbaijan appeared limited. Therefore, adopting a mixed-methods approach that systematically integrates findings from prior research was deemed essential. Though not widely used in this field, the integrative approach was selected as a valuable tool for constructing a systematic and localized conceptual model.

To customize and validate the extracted model, the researcher presented the identified categories
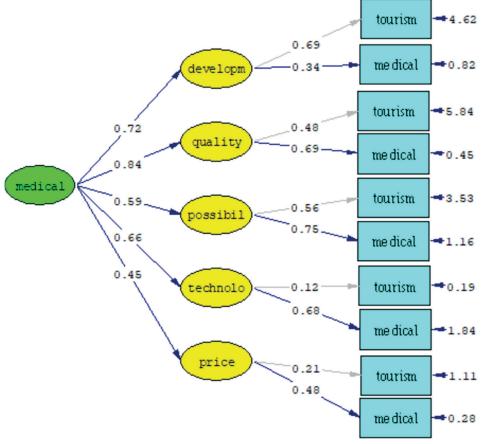

Figure 2: Model of standard research coefficients

(dimensions), concepts (components), and codes (indicators) to academic experts and tourism organization managers who met the criteria for research expertise. The study aimed to assess the content validity of the proposed model. After confirming the questionnaire's validity using the Content Validity Index (CVI) and related indices, the final questionnaire was administered to the target population to test the model. Structural validity, assessed through confirmatory factor analysis (CFA), confirmed the conceptual model.

The research model, derived from the integrative approach and validated through statistical analysis, consists of 5 dimensions, 10 components, and 40 indicators. This model effectively represents the marketing model for medical tourism in East Azerbaijan. The confirmatory factor analysis results confirmed the model's validity, allowing for further discussion of its components.

1. Results of Factor Analysis for the Dimension of Healthcare and Tourism Services Quality

This dimension comprises two components:

1. **Tourism**: Indicators include public and city transportation, parking facilities, shopping centers in Tabriz, hospitality services for accompanying persons, and high-quality urban services.

2. **Medical Services**: Indicators include the quality and variety of medical services, special services for international patients, adequate insurance coverage, ethical behavior of physicians, and banking and currency facilities for patients.

All indicators in this dimension demonstrated factor loadings above the standard value of 0.4, confirming their significant contribution to medical tourism marketing. This aligns with findings from studies by Goodarzi et al. (2014) (12), Maleki and Tavangar (2015) (34), Hajinejad et al. (2016) (35), Nasirpour and Salmani (2010) (36), Mansooryar et al. (2017) (37), Maboodi and Hakimi (2015) (38), Zarei et al. (2016) (39), Harandi and Mirzayyan-Khamseh (2017) (40), Kafash et al. (2009) (41), and Suthin et al. (2007) (25)), which emphasized the importance of public transportation, hospitality services, and high-quality medical services in medical tourism.

2. Results of Factor Analysis for the Price Category of Medical and Tourism Services

This category includes two components:

1. **Tourism**: Indicators include low accommodation costs, affordable transportation, competitive pricing for tour guide services, and competitive prices in shopping centers.

2. **Medicine**: Indicators include low costs for medical services, patient accommodation, surgeons' fees, and medical equipment and supplies.

All indicators in this category demonstrated factor loadings above 0.4, confirming their significance in medical tourism marketing. These findings are consistent with prior studies by Goodarzi et al. (2014) (12), Maleki and Tavangar (2015) (34), Hajinejad et al. (2016) (35), Nasirpour and Salmani (2010) (36), Maboodi and Hakimi (2015) (38), Saraei and Afsharipoor (2018) (42), and Badiei et al. (2016) (43)), which identified cost-effectiveness as a critical factor in attracting medical tourists.

3. Results of Factor Analysis for the Medical Tourism Development Category

This category consists of two components:

1. **Tourism**: Indicators include the development of air and ground fleets, attractive multimedia advertising, word-of-mouth advertising, and the existence of medical tourism agencies.

2. **Medicine**: Indicators include the development of modern medical equipment, support for foreign languages in medical centers, strengthening the reputation of medical centers, and establishing international hospitals.

All indicators in this category demonstrated factor loadings above 0.4, confirming their significance in medical tourism marketing. These results align with findings from Fazli-Ardakani (2015) (44), Hajinejad et al. (2016) (35), Mansouriyar et al. (2017), Maboodi and Hakimi (2015) (38), Zarei et al. (2016) (18), Harandi and Mirzayyan-Khamseh (2017) (45), Badiei et al. (2016) (43), and Suthin et al. (2007) (25).

4. Results of Factor Analysis for the Category of Medical and Tourism Facilities and Equipment

This category includes two components:

1. **Tourism**: Indicators include communication and telecommunication facilities during the stay, tourist attractions in Tabriz, natural places for treatment, and websites and marketing to attract medical tourists.

2. **Medicine**: Indicators include advanced medical equipment (e.g., CT-Scan, MRI), hotel

facilities in hospitals, specialist and super-specialist doctors, and a variety of medical centers.

All indicators in this category demonstrated factor loadings above 0.4, confirming their significance in the concept of medical tourism marketing. These findings are consistent with studies by Nasirpour and Salmani (2010) (46), Mansouriyar et al. (2017), Maboodi and Hakimi (2015) (38), Zarei et al. (2016) (18), Harandi and Mirzayyan-Khamseh (2017) (45), Saraei and Afsharipoor (2018) (42), Badiei et al. (2016) (43), Moghavvemi et al. (2017) (22).

5. Results of Factor Analysis for the Information and Communication Technology Category

This category comprises two components:

1. **Tourism**: Indicators include the quality of electronic communication, internet speed in Tabriz, video call quality, and landline access.

2. **Medicine**: Indicators include electronic reception of foreign patients, remote technology services, telemedicine, remote counseling and training, electronic file systems, and electronic advertising of medical centers.

All indicators in this category demonstrated factor loadings above 0.4, confirming their significance in medical tourism marketing. These results align with findings from Delgoshaei et al. (2012), Mansouriyar et al. (2017), Sarayi and Afsharipour (2018), Badiei et al. (2016) (43), Runnels and Carrera (2012) (24), Moghavvemi et al. (2017) (22).

Despite the significant findings, this study has the following limitations. It is acknowledged that this study will have limitations in the generalization of the model domain because, culturally, they have been formulated specifically for the province of East Azerbaijan, Iran. The existence of cultural and infrastructural differences will result in not being fully generalizable to other countries. However, other researchers, policymakers, and managers can adapt the model to the cultural and infrastructure issues by considering the factors and relationships between the domains and using it according to their needs. Therefore, it is recommended that other countries adopt the domains of the currently designed model in order to generalize the result culturally and infrastructurally.

Conclusions

In summary, the dimensions, components, and outcomes of the final medical tourism marketing model for East Azerbaijan Province demonstrate satisfactory reliability and coherence at a 95% confidence level. The findings indicate that each of the five dimensions—1) "Quality of Healthcare and Tourism Services," 2) "Price of Healthcare and Tourism Services," 3) "Development of Medical Tourism," 4) "Facilities and Equipment for Healthcare and Tourism," and 5) "Information Technology and Communication"—has been thoroughly examined and contributes significantly to the model, as evidenced by meaningful factor loadings at the 95% confidence level.

Despite the considerable potential of East Azerbaijan Province in the health tourism sector, attracting more tourists will require building trust among tourists in the region's healthcare offerings. Strategic planning and policy-making must be undertaken in collaboration with relevant authorities and government bodies to achieve this. These efforts should focus on the main and sub-domains of the model, emphasizing service quality, cost-effectiveness, medical tourism development, infrastructure and medical equipment, and information technology.

The model presented in this study provides a valuable framework for managers, policymakers, and planners, offering a comprehensive and precise perspective to identify and prioritize executive actions across the various domains of the model. This approach will facilitate informed decision-making and enhance the region's global medical tourism market competitiveness.

Authors' Contribution

AP, AJ, and MR initiated and conceptualized the study. AP and MR designed the study with input from AJ and YAM. AP played a key role in data collection, while AP and HBKN conducted the data analysis. AP prepared the initial draft of the manuscript. All authors critically reviewed the manuscript, offering feedback to enhance its content and read and approved the final version before submission.

Funding

Ethics Approval and Consent to Participate

This study was approved by the Institutional Review Board (IRB) of the Islamic Azad University, Tabriz Branch, and has received formal ethical approval (Approval No. IR.IAU.TABRIZ. REC.1403.593). All individuals were provided detailed information about the study's objectives before participation, and their written informed consent was obtained. The confidentiality and anonymity of participants were strictly maintained throughout the research process, and no personal identifying information was disclosed. The authors affirm that all procedures adhered to ethical guidelines and regulations.

Conflict of interest

The authors state that they have no competing interests.

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