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Presenting a Model of Factors Affecting The Development of Medical Tourism in Iran

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ABSTRACT

This study aims to identify and systematically model the principal factors influencing the development of medical tourism in Iran, and to propose actionable strategies for its enhancement. The present study is applied. The theoretical population of this study includes experts with qualifications and experience in medical tourism. Sampling in this study was done in a judgmental manner and based on specialized knowledge with a sample size of ten people. Literature review, screening questionnaires, and interaction questionnaires were the main data collection methods in this study. Thirty factors were extracted from the research background and expert opinion, of which 21 factors had a defuzzified number greater than 0.7, which were categorized into 9 groups and selected for final evaluation and modeling. The screened stimuli were evaluated using the interaction technique with Micmac software. Four dominant factors were identified as particularly influential in advancing medical tourism in Iran: travel and treatment costs; the influence of the destination country's culture, religion, and national brand image; the quality of doctors, hospitals, and medical services; and government policies and support. The interactions between these drivers were mapped, providing an in-depth understanding of their systemic roles within the sector. Enhancing the competitiveness of Iran's medical tourism sector requires strategic measures focused on reducing costs, strengthening national branding and cultural appeal, elevating service quality, and reinforcing government support and policies. The findings offer a robust, data-driven framework for policymakers and sector stakeholders to guide targeted interventions and informed decision making for sustainable development.

Keywords: Medical Tourism, Health Tourism Development, Fuzzy Delphi, Cross-Impact Analysis, Iran

Introduction

Medical tourism has emerged as a dynamic and rapidly expanding segment of the global tourism industry, driven by patients seeking affordable, high-quality, and timely healthcare services abroad (Connell, 2013). Rising costs of medical procedures in high-income countries, combined with long waiting times and limited insurance coverage, have pushed individuals to cross borders for treatment (Smith, 2011). The globalization of healthcare delivery, facilitated by cheaper international flights, increased digital connectivity, and deregulated markets, has transformed patient mobility into a multibillion-dollar enterprise

(Leng, 2010). Over the past two decades, destinations in Asia and Latin America have actively positioned themselves in this market by combining clinical excellence with competitive pricing and cultural accessibility (Chee, 2017; Ganguli, 2017).

Although medical travel is not a modern phenomenon—historically people journeyed to Greek healing sanctuaries and Indian Ayurvedic centers—it has acquired new strategic importance in the twenty-first century (An, 2014; Asa, 2024). Today, nations such as South Korea, Thailand, Malaysia, and Singapore are recognized hubs, having invested heavily in hospital accreditation, infrastructure, and branding (Ganguli, 2017; Kim, 2019). Governments in these countries have forged alliances with airlines, insurance companies, and technology firms to create seamless patient journeys and integrated service networks (Karadayi-Usta, 2024). In contrast, emerging economies with strong clinical assets but fragmented governance—including Iran—have yet to translate their comparative advantages into global competitiveness (Saeidi Mofrad & Pakan, 2022).

Iran is uniquely positioned to become a leading medical tourism destination. The country boasts highly skilled physicians, advanced hospitals, competitive treatment costs, and cultural affinity with large regional populations (Saeidi Mofrad & Pakan, 2022). Iranian healthcare has established expertise in fields such as infertility treatment, stem cell therapy, cardiology, and organ transplantation, while the cost of complex surgeries remains significantly below that of regional rivals and Western nations (Malhotra, 2024). Geographic proximity to the Persian Gulf and Central Asian states, as well as shared religious and cultural values with many potential visitors, further strengthen its appeal (Asa, 2024). Nevertheless, Iran's global share of medical tourism flows remains disproportionately low compared to its capacity (Reshadi, 2025). Understanding why this gap persists—and how to overcome it—is crucial for policy makers and industry stakeholders.

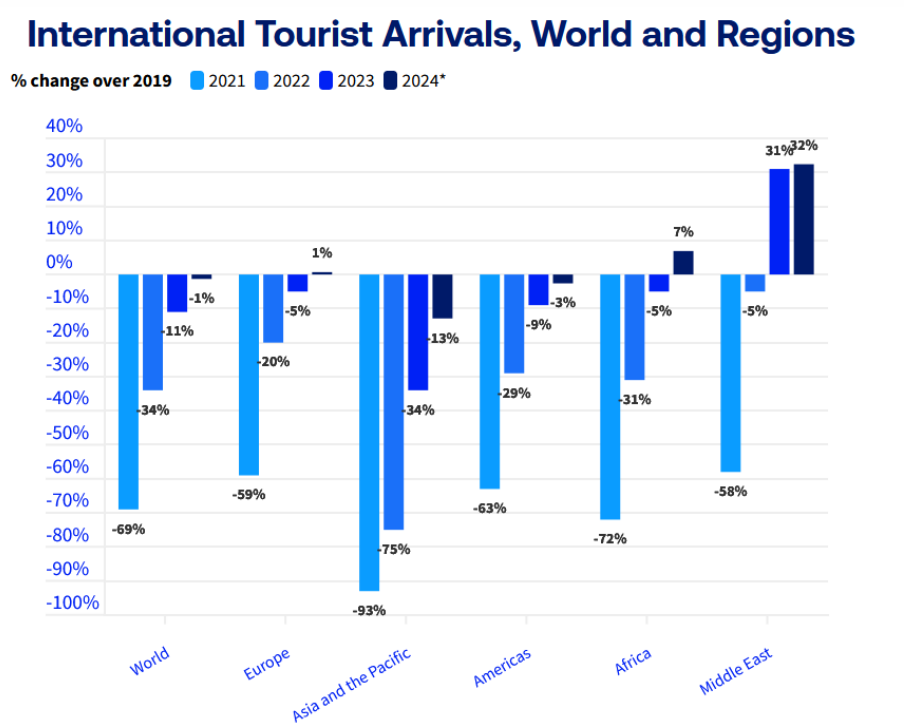

Figure 1. The rate of changes in medical tourism

A review of the global literature shows that the drivers of medical tourism are complex and interconnected. Destination image, including perceptions of safety, hospitality, and healthcare quality, significantly influences patients' choice of country (Alp, 2024). Studies have operationalized this concept through robust measurement models capturing healthcare excellence, travel convenience, treatment diversity, and communication effectiveness (Alp, 2024). Marketing and promotional strategies also matter: integrated marketing communication (IMC) frameworks highlight the decisive influence of word-of-mouth referrals, electronic media, and digital marketing in shaping demand (Nunabee, 2025; Wen, 2025). Indeed, research on pediatric hematopoietic cell transplantation demonstrates how patient-to-patient referrals can drive institutional reputation and revenue (Wen, 2025). Thailand's success, for instance, stems from coordinated advertising, public relations, and e-WOM campaigns tailored to Middle Eastern audiences (Nunabee, 2025).

Beyond promotion, service quality and clinical governance are core determinants of competitiveness. South Korea's medical tourism model underscores the importance of internationally recognized accreditation, physician reputation, and post-treatment safety (Kim, 2019). Yet a systematic review of the sector shows that many emerging destinations struggle to maintain consistent quality standards and to provide integrated aftercare, leading to complications and reputational risk (Pikkel, 2025). Research examining inbound complication rates over more than a decade highlights that insufficient follow-up and infection control protocols remain persistent vulnerabilities (Pikkel, 2025). These findings emphasize that growth strategies must combine cost advantages with rigorous safety and quality frameworks.

Technology is another transformative force reshaping medical tourism. Digital health passports, telemedicine, artificial intelligence, and blockchain solutions are expanding patient access, improving information transparency, and enabling personalized care (Al-Romeedy, 2025). Digitalization can streamline pre-travel consultations, facilitate secure data exchange, and support virtual follow-ups, thereby addressing one of the field's chronic weaknesses: fragmented care continuity (Reshadi, 2025). However, scholars warn that digital transformation also poses new challenges, including privacy risks, uneven access to infrastructure, and regulatory gaps (Al-Romeedy, 2025). For countries like Iran, where internet penetration and data governance remain uneven, technology adoption must be carefully planned and supported by robust policy frameworks.

Sustainability considerations further complicate the sector's long-term development. While most research emphasizes marketing and technology, sustainable growth depends on multi-stakeholder collaboration that integrates hospitals, government agencies, insurers, tourism boards, and local communities (Karadayi-Usta, 2024). Simple provider-driven models are insufficient; instead, systemic partnerships and inclusive governance mechanisms are needed to balance economic gains with patient safety and cultural and environmental responsibility. Iran's health and tourism systems remain relatively siloed, with limited coordinated action among ministries and industry actors—a structural weakness that hinders sustainable development (Reshadi, 2025).

Post-pandemic behavioral dynamics have added another layer of complexity. COVID-19 disrupted international mobility and heightened risk perceptions, leading to new psychological barriers to travel (Latief, 2024; Shoukat, 2025). Studies applying complexity theory show that medical tourists' willingness to travel is strongly mediated by trip anxiety and perceived susceptibility (Shoukat, 2025). Improving the Medical Tourism Index (MTI) dimensions—quality, safety, cost transparency, and communication—can reduce fear and rebuild confidence (Latief, 2024). For Iranian providers, understanding these behavioral shifts is essential to rebuilding trust among regional patients and reactivating pre-pandemic demand.

To analyze such a multifaceted system, robust foresight and modeling tools are needed. Strategic prospective techniques, notably the Fuzzy Delphi method and cross-impact analysis (MICMAC), provide structured ways to identify and prioritize key drivers (Godet, 1999; Habibi, 2015; Jiménez, 2009). These approaches allow experts to quantify the influence and dependence of multiple variables, revealing leverage points and systemic interdependencies. They have been successfully applied to various policy and market forecasting contexts, including tourism competitiveness and healthcare planning (Benjumea-Arias, 2016; Mojica, 2005). Applying such tools to Iranian medical tourism can clarify which factors exert the strongest direct and indirect effects and which are more reactive outputs.

The present study responds to the urgent need for an integrated, evidence-based understanding of Iran's medical tourism ecosystem. Building on global insights but tailored to local realities, it employs the Fuzzy Delphi technique to refine an initial set of drivers drawn from the international literature and expert consultation.

Methods and Materials

The primary objective of this study is to develop a model identifying the factors that influence the development of health tourism in Iran. To achieve this, two complementary quantitative methods, the Fuzzy Delphi Technique and Cross-Impact Analysis (MICMAC), were employed. Both approaches utilize expert judgment in a structured and quantitative manner for evaluation and analysis. Specifically, the Fuzzy Delphi method was applied to screen and refine the list of influencing drivers, while the MICMAC method was used to determine the most significant and structurally influential factors.

Given the practical implications of the study for the medical tourism industry, the research adopts a quantitative and applied methodology. Data was collected through surveys administered to a panel of experts.

The initial set of influencing drivers was derived through an extensive literature review of scholarly research on medical tourism. These preliminary factors were then assessed via two expert-designed instruments: an expert evaluation questionnaire (for the Fuzzy Delphi analysis) and a cross-impact analysis questionnaire (for the MICMAC analysis). The Fuzzy Delphi technique was used to assess the relevance and validity of each driver, and the MICMAC method was employed to analyze the interrelationships and systemic impact of these factors.

Because the initial pool of factors was extracted from peer-reviewed academic literature, the content validity of the research instruments was deemed to be high. Moreover, to further ensure the validity of the expert questionnaires, the Lawshe Content Validity Index was employed. The index value for all identified drivers exceeded 0.79, indicating a desirable level of content validity.

The expert panel consisted of professionals actively involved in the medical tourism sector. The sampling approach was judgmental (purposive sampling), based on participants' expertise and experience in the field. A total of 10 experts participated in the study. The selected experts were active in the field of medical tourism with more than ten years of experience or university faculty members with at least an associate professor's degree. Faculty members were selected only from public universities. 5 experts were from the public sector and 5 others were from the private sector. The research process unfolded in three phases:

1. Identification of factors: Key drivers influencing medical tourism in Iran and globally were identified through a comprehensive literature review.
2. Screening of factors: These drivers were evaluated and filtered using the Fuzzy Delphi technique.
3. Model development: The remaining drivers were analyzed using MICMAC software to develop a structural model of the factors influencing medical tourism.

The Fuzzy Delphi technique was employed in this research to identify and prioritize the most relevant drivers of medical tourism. The first step in this process involved constructing an appropriate fuzzy scale to convert qualitative expert opinions into fuzzy numerical values. In this study, a five-point Likert scale was used, as illustrated by Habibi, Jahantigh, and Sarfarazi (2015).

Table 1. Spectrum of the Fuzzy Delphi Method

Triangular fuzzy number	Fuzzy value	Verbal variable
(0, 0, 0.25)	$\tilde{1}$	Very low
(0, 0.25, 0.5)	$\tilde{2}$	Low
(0.25, 0.5, 0.75)	$\tilde{3}$	Medium
(0.5, 0.75, 1)	$\tilde{4}$	High
(0.75, 1, 1)	$\tilde{5}$	Very high

When the questionnaire made with a 5-point Likert scale was distributed among the experts and one of the options was selected, after collecting the questionnaires, a triangular fuzzy number was assigned to each option according to Table 1, which after averaging and obtaining the definitive limit was compared with the number 0.7, which is the threshold limit, and if it is greater, it is confirmed.

The Micmac software was created by the Institut d'Innovation Informatique pour l'Entreprise, with guidance from their founders at the Laboratory for Research in Future Strategy and Organization, LIPSOR (Godet, 1999). This relates to structural analysis, where structure is viewed as a system that is examined, and the parts within it have connections to each other. Additionally, this approach allows for the inclusion of qualitative factors and the exploration of various uncertain future scenarios (Jimenez, 2009). The method begins by defining the problem, followed by identifying a list of both internal and external factors. Next, it examines how these factors relate within the system, measuring these relationships based on how they are impacted by each other's presence. The influence of these factors is rated on a scale: no influence, low, medium, or high, which can translate to a scale of 0, 1, 2, and 3 or 0, 1, 3, and 4. Generally, the information input is qualitative, allowing adjustments to the strength of the relationships (0 = none, 1 = weak, 2 = moderate, 3 = strong, P = potential). The ratings help to pinpoint key factors by categorizing them as either direct or indirect. The analysis of how factors influence and depend on each other is determined by where each factor falls within a quadrant. This results in classifying a factor as either a power factor, an independent factor, a conflict factor, or an output factor, based on their levels of influence and dependence.

Table 2. Factors affecting medical tourism

No.	Research drivers	Researcher(s)	Content validity Index	Defuzzified number

1	Quality of doctors and hospitals (level of expertise and reputation of medical centers)	(Alp, 2024; Kim, 2019; Latief, 2024)	0.88	0.79
2	Access to specific treatments	(An, 2014)	0.82	0.65
3	Ease and safety of travel and travel related risks	(Alp, 2024; An, 2014)	0.81	0.73
4	Variety of treatments	(Alp, 2024)	0.80	0.67
5	Communication (the extent of access to information and interactions between patients and service providers)	(Alp, 2024)	0.82	0.68
6	The impact of religious and cultural beliefs on choosing a treatment destination	(Asa, 2024)	0.87	0.79
7	Access to information	(Alp, 2024; An, 2014; Latief, 2024)	0.82	0.66
8	Fourth generation technologies (e.g., AI and Telemedicine)	(Al-Romeedy, 2025)	0.89	0.78
9	Treatment and medical cost	(Asa, 2024)	0.88	0.79
10	Trust in foreign doctors	(Asa, 2024)	0.80	0.67
11	Risks related to health	(An, 2014)	0.81	0.69
12	Globalization of healthcare regulations (international agreements such as GATS)	(Chee, 2017)	0.87	0.78
13	Post-surgery risks	(An, 2014)	0.81	0.68
14	Therapeutic mediators	(Chee, 2017)	0.88	0.79
15	Access to low-cost airlines	(Chee, 2017)	0.87	0.75
16	Collaboration between stakeholders (interaction between hospital, insurance, government and tourism agency to provide better services)	(Karadayi-Usta, 2024)	0.85	0.75
17	Ensure Economic sustainability	(Karadayi-Usta, 2024)	0.80	0.62
18	Technology and innovation	(Karadayi-Usta, 2024)	0.87	0.75
19	Risk and safety management	(Karadayi-Usta, 2024)	0.88	0.72
20	National brand and popularity of the country's culture	(Kim, 2019; Nunabee, 2025)	0.89	0.79
21	Tourism activities for patients' companions	(Kim, 2019)	0.83	0.74
22	Additional supports for patient comfort, such as interpreters and guides	(Kim, 2019)	0.86	0.75
23	Health system reforms	(Leng, 2010)	0.82	0.68
24	Government support and health policies	(Leng, 2010; Li, 2024; Reshadi, 2025)	0.87	0.75
25	The prominent role of physicians and consideration of their views by policymakers	(Li, 2024)	0.88	0.76
26	Marketing and Advertisement	(Nunabee, 2025; Reshadi, 2025)	0.89	0.79
27	International accreditation of hospitals	(Malhotra, 2024)	0.86	0.76
28	Word of mouth	(Wen, 2025)	0.87	0.77
29	Digital marketing	(Nunabee, 2025)	0.84	0.79
30	Medical tourism infrastructure	(Reshadi, 2025; Saeidi Mofrad & Pakan, 2022)	0.88	0.78

About thirty factors affecting medical tourism were extracted through a review of the literature. Then, expertise questionnaires were distributed among the experts and these questionnaires were analyzed using the fuzzy Delphi technique. After fuzzy averaging of the experts' opinions, the defuzzified numbers of factors was determined. There were 21 factors with a defuzzified number over 0.7, which were classified into 9 general groups due to their high similarity to each other and were considered for the final analysis. These nine factors include travel and treatment costs(A1), convenience and ease of travel (considering travel conditions and geographical proximity)(A2) , the creation of tourism infrastructure(A3) , government policy and support (A4), the quality of doctors, hospitals and medical services(A5), cooperation between all stakeholders and intermediaries related to medical tourism(A6) , technology and innovation(A7), marketing and advertising(A8) , and the impact of the culture and religion of the destination country and national brand image(A9) . After screening the key factors affecting health tourism, these factors are evaluated using the cross-impact analysis method. This step was accomplished by sending the impact study questionnaire to the experts. The questionnaires were then evaluated using the MicMac application.

Findings and Results

In this section, the research variables were analyzed using the cross-impact analysis technique. The first step in conducting this analysis—following the formation of the expert panel—was the construction of an n × n matrix, which was then completed by the experts. Given the identification of nine key factors, a 9 × 9 matrix was created, and its cells are filled with the numbers 3, 2, 1, and 0. The number 3 indicates a high effect, 2 indicates a medium effect, and 1 indicates a low effect. The number 0 indicates the absence of an effect and relationship. After completing the questionnaires, the values for each cell in the initial reachability matrix were determined based on the mode (most frequent value) among expert responses. The table below shows the characteristics of the cells of the initial access matrix.

Table 3. cross impact analysis indicators

Indicator	Value

Matrix size	9
Number of iterations	2
Number of zeros	12
Number of ones	14
Number of twos	22
Number of threes	33
Number of P	0
Total	69
Fillrate	85.18519%

Based on the completed questionnaires, the MICMAC software categorized the variables in terms of influence and dependence, as shown in the following tables. In this context, the row sum indicates the degree of influence, and the column sum indicates the degree of dependence.

Table 4. Row and column sum of a matrix

No.	Variable	Total number of rows	Total number of columns
1	A1	22	14
2	A2	14	18
3	A3	16	23
4	A4	18	13
5	A5	20	19
6	A6	13	16
7	A7	17	12
8	A8	16	19
9	A9	21	23
	Totals	157	157

Table 5. Ranking factors based on direct and indirect effects

Rank	Label	Direct Influence	Label	Direct Dependence	Label	Indirect Influence	Label	Indirect Dependence
1	A1	1401	A3	1464	A1	1354	A3	1418
2	A9	1337	A9	1464	A9	1285	A9	1409
3	A5	1273	A5	1210	A5	1255	A5	1219
4	A4	1146	A8	1210	A4	1151	A8	1200
5	A7	1082	A2	1146	A7	1092	A2	1157
6	A3	1019	A6	1019	A8	1036	A6	1036
7	A8	1019	A1	891	A3	1033	A1	908
8	A2	891	A4	828	A2	940	A4	856
9	A6	828	A7	764	A6	849	A7	793

As shown in the table above, variables A1, A9, A5, and A4 exhibit the highest influence, whereas A3, A9, A5, and A8 exhibit the highest dependence.

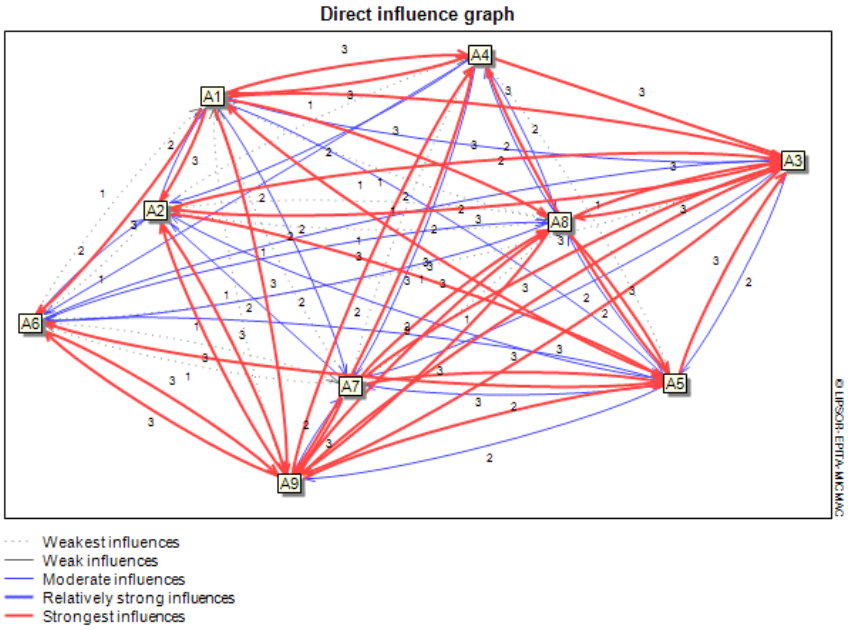

Figure 2. Direct influence graph

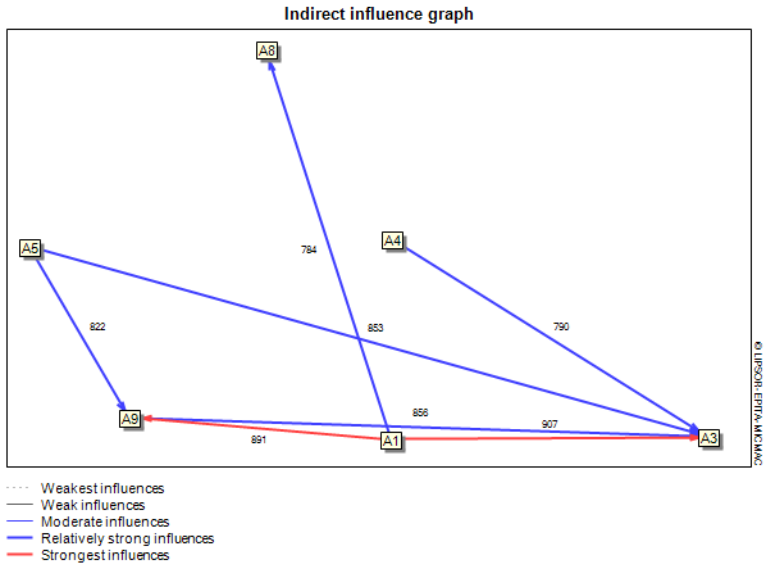

Figure 3. Indirect influence graph

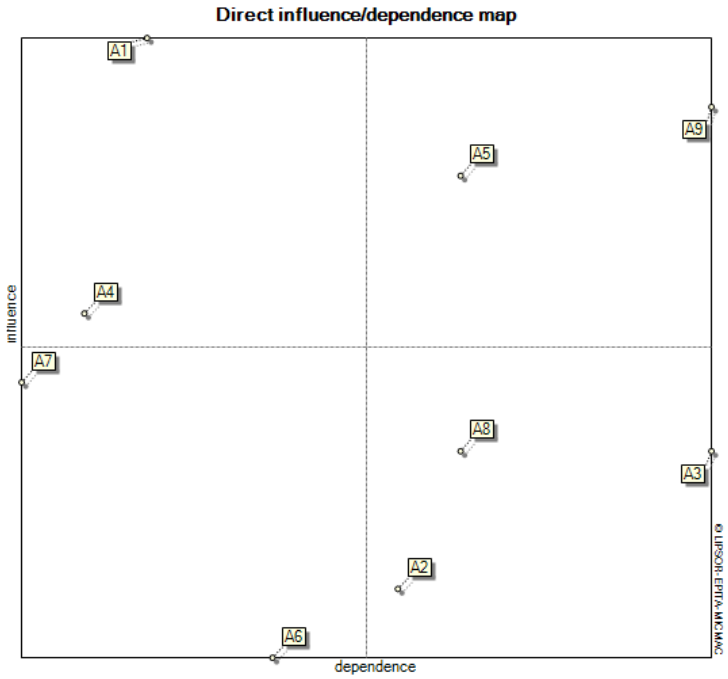

Figure 4. Direct influence/dependence map

In the figure above, the diagram is divided into four distinct quadrants, each representing a different functional role within the system under study. Conceptually, these quadrants can be likened to the four sectors of a trigonometric circle, with each area offering insights into the nature and dynamics of the variables based on their influence and dependence scores.

The first quadrant, located in the northeastern part of the diagram, contains variables characterized by both high influence and high dependence. These are referred to as dual-role variables or bidirectional variables due to their significant effect on the system and simultaneous sensitivity to changes within it. The inherent nature of these variables makes them unstable, as they are both affected by and affect many other elements in the system. Within this quadrant, variables are further categorized into two types: risk variables and target variables. Risk variables are those that lie along or near the diagonal line stretching from the northeast to the southwest. Their position indicates a balance between influence and dependence, making them potential leverage points for system-wide change. In contrast, target variables are positioned below the diagonal, meaning they are more dependent than influential. These are particularly susceptible to upstream interventions, and well-designed actions targeting them can trigger transformative changes across the system.

The second quadrant, situated in the northwestern region, consists of variables with high influence and low dependence. These variables exert a strong effect on the rest of the system while remaining relatively unaffected by other components. As such, they are often viewed as external inputs or driving forces of the system. Importantly, due to their independence, they are generally not directly controllable by the internal mechanisms of the system, which makes their monitoring and anticipation crucial for strategic planning.

In the southwestern part of the diagram lies the third quadrant, which contains the independent variables. These variables are characterized by low influence and low dependence, indicating minimal interaction with the rest of the system. Their connection to the system is weak, and they neither significantly shape nor are shaped by system dynamics. Within this group, variables are again classified into three subtypes. Discrete variables, positioned near the origin of the coordinate plane, are virtually disconnected from system behavior and may be considered irrelevant or removable. Secondary leverage variables, while formally independent, are located above the diagonal line, suggesting they possess a marginal but notable capacity to exert influence. Regulatory variables, often found near the center of gravity of the diagram, may play modest balancing roles and can be seen as weak targets or secondary risk variables, depending on their precise location.

Finally, the southeastern quadrant encompasses variables with low influence and high dependence. These are referred to as output variables, as they reflect the outcomes of interactions and processes occurring elsewhere in the system. They are highly sensitive to fluctuations in influential and bidirectional variables and often indicate the state or performance of the system.

Particular attention is drawn to technology- and innovation-related variables, which tend to fall within this quadrant, highlighting their reactive nature and their potential to serve as performance indicators rather than primary drivers.

The classification and positioning of each variable within these four quadrants provide a comprehensive understanding of their systemic role and strategic importance. This information forms the basis for prioritizing interventions and policy decisions in the context of medical tourism development.

Table 6. Typology of model variables in the influence-dependence diagram

Variable type	Desired variable
Two-faced variable	A5, A9
Risk variable	A5
Target variable	A9
Influential	A1, A4
Independent	A7, A6
Dependence	A2, A3, A8

Discussion and Conclusion

The purpose of this study was to identify, structure, and analyze the systemic factors shaping the development of medical tourism in Iran. By integrating the Fuzzy Delphi technique with MICMAC cross-impact analysis, we produced a data-driven model that reveals not only the most influential drivers but also the interdependencies among them. The results highlight four dominant forces—travel and treatment costs (A1), cultural and religious alignment and national brand image (A9), the quality of doctors and hospitals (A5), and government policy and support (A4). Together, these drivers form the backbone of Iran's competitive potential in the global medical tourism market.

The prominence of travel and treatment costs (A1) underscores the price sensitivity of international medical travelers. This is consistent with decades of research describing cost as a primary push factor motivating outbound treatment (Connell, 2013; Smith, 2011). Comparative analyses show that patients from high-income economies frequently seek destinations with lower prices for surgeries, dental care, and fertility services (Kim, 2019; Malhotra, 2024). Iran's competitive advantage lies in its ability to deliver complex procedures at significantly lower costs than both regional hubs and Western nations (Saeidi Mofrad & Pakan, 2022). The MICMAC results indicate that cost is not merely an output variable but a powerful systemic influencer: reducing financial barriers can trigger positive ripple effects on demand, destination image, and marketing reach. Prior work in Southeast Asia shows that cost competitiveness alone, however, is insufficient if unaccompanied by robust safety and service quality frameworks (Chee, 2017; Ganguli, 2017). Thus, cost leadership must be integrated with mechanisms ensuring patient trust and postoperative care.

Cultural and religious alignment and national brand image (A9) emerged as another decisive driver. This reflects the evidence that patients prefer destinations where cultural familiarity, language accessibility, and religious congruence reduce psychological and logistical frictions (An, 2014; Asa, 2024). Destinations that actively embed cultural sensitivity into their marketing and patient experience—such as Thailand's tailoring of services to Middle Eastern clientele—achieve stronger reputational capital (Nunabee, 2025). Iran has inherent advantages: shared Islamic values with large patient pools in the Persian Gulf and Central Asia, plus deep cultural ties across the region. Yet previous research notes that despite these affinities, Iran has not effectively converted them into a coherent, trusted brand (Reshadi, 2025). Our model shows that cultural and branding variables are not merely symbolic; they strongly influence both marketing effectiveness and perceptions of service quality. Branding also amplifies word-of-mouth channels, a major determinant of patient flow (Wen, 2025). Harnessing these cultural ties through purposeful national branding campaigns and credible digital storytelling could therefore act as a multiplier across other system components.

The quality of doctors, hospitals, and medical services (A5) is unsurprisingly central, reinforcing what global scholarship has long emphasized: quality and safety are the non-negotiable pillars of competitive medical tourism (Alp, 2024; Kim, 2019). International patients evaluate destinations by provider expertise, accreditation, clinical outcomes, and infection control protocols (Pikkel, 2025). Our analysis confirms that Iran's strong clinical reputation in specialized fields such as fertility, stem cell therapy, and organ transplantation constitutes a latent comparative advantage. However, quality alone must be made visible and credible; global success stories show that destinations link clinical excellence with internationally recognized hospital accreditation and transparent outcomes reporting (Alp, 2024; Malhotra, 2024). Moreover, the risk dimension is real: research

on long-term complication rates among inbound patients demonstrates the reputational harm and liability exposure that can follow poor aftercare (Pikkel, 2025). Our findings imply that raising and documenting clinical standards, and integrating post-treatment continuity of care, are essential if Iran is to convert skill into sustained trust.

Government policy and institutional support (A4) also showed a high degree of influence, reflecting the inherently policy-intensive nature of medical tourism (Leng, 2010; Li, 2024). Countries that have outperformed—Malaysia, Singapore, Thailand—benefited from deliberate governmental action: streamlined visa and entry procedures, clear investment regulations, coordinated public-private partnerships, and health system reforms targeting international patient needs (Chee, 2017; Karadayi-Usta, 2024). Our findings indicate that Iran's fragmented governance is a major bottleneck. Without cohesive policy frameworks, even world-class physicians and competitive pricing cannot attract sustainable flows. Scholars have noted that successful destinations typically embed medical tourism within broader economic and diplomatic strategies, aligning health ministries, tourism boards, and foreign affairs (Malhotra, 2024). Strategic planning and foresight—supported by methodologies like those used here—are essential to guide coherent policy and mitigate regulatory uncertainty (Godet, 1999; Mojica, 2005).

One of the study's conceptual contributions lies in showing how these factors interact. Our MICMAC analysis reveals that cost advantages (A1) and cultural branding (A9) exert direct influence not only on patient choice but also on marketing efficacy (A8) and technology adoption (A7). This supports the notion that successful marketing strategies depend on credible value propositions: price leadership must be combined with authentic cultural narratives and visible service quality (Nunabee, 2025; Wen, 2025). Likewise, government support (A4) acts as a structural enabler for technology integration and international accreditation. Without coherent digital health policy and data protection standards, advanced tools like telemedicine or digital health passports may remain underutilized (Al-Romeedy, 2025; Reshadi, 2025).

Interestingly, technology and innovation (A7) in our model exhibited lower direct influence but high dependence, confirming that digital transformation is often a reactive rather than primary driver in emerging destinations. This mirrors findings from comparative digital adoption studies: while technology enhances efficiency and reach, its uptake is contingent upon stable regulatory frameworks and credible clinical ecosystems (Al-Romeedy, 2025). In Iran's case, investment in telehealth and AI-enabled platforms could reinforce marketing and patient continuity once policy and brand foundations are in place.

Another systemic insight is that marketing and advertising (A8)—though crucial for visibility—depend heavily on upstream drivers. Our results resonate with integrated marketing communication (IMC) research from Thailand, where word-of-mouth and e-WOM succeeded because they were anchored in trustworthy care and cultural resonance (Nunabee, 2025). For Iranian actors, this means marketing cannot be pursued as a stand-alone tactic; it must be backed by policy coherence, cost transparency, and measurable service quality.

These findings converge with and extend the international evidence base. Previous meta-reviews have underscored cost, service quality, and marketing as universal success dimensions (Malhotra, 2024; Smith, 2011). Our study validates these but adds depth by demonstrating their systemic interplay in an underexplored context. It also complements research on cultural affinity as a competitive lever (An, 2014; Asa, 2024), showing that cultural branding is not a passive asset but an active, high-influence driver in complex systems.

Moreover, by using Fuzzy Delphi and MICMAC, this work operationalizes foresight approaches long advocated in strategic health planning (Godet, 1999; Habibi, 2015; Jiménez, 2009). While foresight has been applied in corporate strategy and infrastructure planning (Benjumea-Arias, 2016; Mojica, 2005), its application to medical tourism in Iran is novel. This methodological contribution enables a structured way to move from fragmented factor lists to actionable system maps.

Finally, the study intersects with emerging post-COVID behavioral research. The strong influence of cost and brand on marketing effectiveness supports findings that reducing travel anxiety requires both rational and emotional levers (Latief, 2024; Shoukat, 2025). Destinations must communicate safety, cultural fit, and economic value simultaneously to restore traveler confidence.

Despite its contributions, this research has limitations. First, it is anchored in expert judgment; although the Fuzzy Delphi method improves reliability, the sample of ten specialists may not capture the full diversity of perspectives in Iran's health and tourism sectors. Second, the study is context-specific; while the identified systemic relationships offer insight for comparable emerging destinations, direct generalization to established hubs like Thailand or South Korea should be cautious. Third, the analysis is primarily structural and does not integrate real-time behavioral or patient choice data. Patient motivations and lived

experiences, especially post-pandemic, may add nuances not fully captured by expert systems modeling. Finally, while MICMAC reveals influence–dependence relationships, it does not test causal strength empirically; future quantitative validation would strengthen predictive power.

Future work could deepen and expand the model in several ways. Larger, multi-stakeholder Delphi panels that include patients, insurance providers, facilitators, and technology firms could enrich the factor set and reduce expert bias. Comparative cross-country studies—especially benchmarking Iran against successful hubs such as Turkey, India, and Malaysia—would clarify best practices and context-sensitive adaptations. Behavioral research integrating patient survey data with structural modeling could add a demand-side layer, clarifying how cost, culture, and brand actually translate into travel intention. Longitudinal foresight, using scenario planning to track macroeconomic, geopolitical, and health system changes, could strengthen resilience planning. Finally, future work might explore quantitative simulation, combining MICMAC maps with system dynamics or agent-based models to test interventions before implementation.

For policymakers, the findings point to clear priorities: reduce cost barriers through smart insurance partnerships and fiscal incentives; launch coordinated national branding campaigns that emphasize Iran's medical excellence and cultural hospitality; and build regulatory clarity for digital health and cross-border patient protection. For hospital managers and private entrepreneurs, investing in international accreditation, outcome transparency, and post-care continuity is critical for sustaining trust and encouraging positive word-of-mouth. Industry coalitions that unite clinics, tourism operators, and technology providers can create seamless patient journeys and bundled experiences. Finally, integrating foresight tools like those used here into strategic planning cycles can help decision makers anticipate shifts in global demand and avoid reactive, fragmented responses.

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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

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

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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References

Al-Romeedy, B. S. (2025). Digital passports to wellness: How technology is shaping medical tourism (A. A. T. P. K. Singh, Trans.). In M. E. Emam (Ed.), *Revolutionizing Healthcare Experience with Digital Medical Tourism* (pp. 111-136). IGI Global. https://doi.org/10.4018/979-8-3693-7888-5.ch004

Alp, G. (2024). Medical tourism destination image: Scale development. *International Journal of Tourism Research*, *26*(4), e2723. https://doi.org/10.1002/jtr.2723

An, D. (2014). Understanding medical tourists in Korea: Cross-cultural perceptions of medical tourism among patients from the USA, Russia, Japan, and China. *Asia Pacific Journal of Tourism Research*, *19*(10), 1141-1169. https://doi.org/10.1080/10941665.2013.840659

Asa, G. A. (2024). Medical tourism among Indonesians: A scoping review. *BMC Health Services Research*, *24*, 49. https://doi.org/10.1186/s12913-023-10528-1

Benjumea-Arias, M. (2016). Structural analysis of strategic variables through MicMac use: Case study. *Mediterranean Journal of Social Sciences*, *7*(4), 11-19. https://doi.org/10.5901/mjss.2016.v7n4p11

Chee, H. L. (2017). International medical travel and the politics of transnational mobility in Asia. *Asia Pacific Viewpoint*, *58*(2), 129-135. https://doi.org/10.1111/apv.12164

Connell, J. (2013). Contemporary medical tourism: Conceptualisation, culture and commodification. *Tourism Management*, *34*, 1-13. https://doi.org/10.1016/j.tourman.2012.05.009

Ganguli, S. (2017). A qualitative analysis of Singapore's medical tourism competitiveness. *Tourism Management Perspectives*, *21*, 74-84. https://doi.org/10.1016/j.tmp.2016.12.002

Godet, M. (1999). *De la anticipación a la acción: Manual de prospectiva y estrategia*. Alfaomega.

Habibi, A. (2015). Fuzzy Delphi technique for forecasting and screening items. *Asian Journal of Research in Business Economics and Management*, *5*(2), 130-143. https://doi.org/10.5958/2249-7307.2015.00036.5

Jiménez, M. (2009). *Herramientas para el análisis prospectivo estratégico: Aplicaciones MICMAC*. Hersa Ediciones.

Karadayi-Usta, S. (2024). Sustainable medical tourism service network with a stakeholder perspective. *Current Issues in Tourism*, *28*(2), 321-340. https://doi.org/10.1080/13683500.2024.2309148

Kim, S. (2019). Critical success factors of medical tourism: The case of South Korea. *International journal of environmental research and public health*, *16*(24), 4964. https://doi.org/10.3390/ijerph16244964

Latief, A. (2024). Healthcare facilities and medical tourism across the world: A bibliometric analysis. *Malaysian Journal of Medical Sciences*, *31*(2), 18. https://doi.org/10.21315/mjms2024.31.2.3

Leng, C. H. (2010). Medical tourism and the state in Malaysia and Singapore. *Global Social Policy*, *10*(3), 336-357. https://doi.org/10.1177/1468018110379978

Li, X. (2024). Perception of medical practitioners on the importance of medical tourism services. *International Journal of Tourism Research*, *26*(1), e2617. https://doi.org/10.1002/jtr.2617

Malhotra, N. (2024). Dimensions and drivers of medical tourism industry: A systematic review of qualitative evidence. *International Journal of Business and Globalisation*, *36*(1), 60-82. https://doi.org/10.1504/IJBG.2024.135998

Mojica, F. (2005). *La construcción del futuro: Concepto y modelo de prospectiva estratégica, territorial y tecnológica*. Universidad Externado de Colombia.

Nunabee, S. (2025). The study of integrated marketing communication for medical tourism in Thailand. *International Journal of Research and Innovation in Social Science*, *9*(2), 1691-1700. https://doi.org/10.47772/IJRISS.2025.9020138

Pikkel, Y. Y. (2025). Mending a world of problems: 12-year review of medical tourism inbound complications in a tertiary centre. *Aesthetic Plastic Surgery*. https://doi.org/10.1007/s00266-024-04523-y

Reshadi, M. S. (2025). A review of medical tourism entrepreneurship and marketing at regional and global levels and a quick glance into the applications of artificial intelligence in medical tourism. *Ai & Society*. https://doi.org/10.1007/s00146-024-02178-6

Saeidi Mofrad, S., & Pakan, P. (2022). The evaluation of health tourism branding indicators in Mashhad metropolis. *Geographical Journal of Tourism Space*, *11*(41), 141-162. https://doi.org/10.52547/gjts.11.41.7

Shoukat, M. H. (2025). Medical tourism index and travel willingness via travel anxiety: PLS-NCA approach. *Tourism Recreation Research*, *50*(2), 369-384. https://doi.org/10.1080/02508281.2023.2240180

Smith, R. (2011). Medical tourism: A review of the literature and analysis of a role for bilateral trade. *Health policy*, *103*(2-3), 276-282. https://doi.org/10.1016/j.healthpol.2011.06.009

Wen, Y. C. (2025). Word-of-mouth referrals between patients are a critical component of medical tourism for pediatric hematopoietic cell transplantation. *Medicine*, *104*(2), e41244. https://doi.org/10.1097/MD.0000000000041244