

# Enhancing Customer Satisfaction through Medical Tourism Supply Chain

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## ABSTRACT

This study examines the relationship between medical tourism supply chain and customer satisfaction in the development of medical tourism in Malaysia. Focusing on destination competitiveness, customer awareness, service quality, Islamic brand image, and highly trained medical professionals, the research aimed to identify which variables most significantly affect customer satisfaction. A quantitative research design was employed using a structured questionnaire, and data were collected from 220 respondents. Multiple regression analysis revealed that all five factors had a significant and positive impact on customer satisfaction, with medical professionals, customer awareness, and destination competitiveness being the most influential predictors. These findings highlight the critical role of expert healthcare providers, informed customers, and a competitive destination image in enhancing the medical tourism experience. The results underscore the need for Malaysian healthcare providers and policymakers to continuously improve service quality, promote Islamic-friendly branding, and invest in skilled medical professionals to maintain global competitiveness. This study contributes to the understanding of consumer behaviour in medical tourism and offers practical recommendations for strengthening Malaysia's position as a top medical tourism destination. Future research should explore areas such as customer experiences, telemedicine integration, post-treatment care, and the broader economic and ethical impacts of the industry to support long-term growth and sustainability.

**Keywords:** medical tourism; customer satisfaction; supply chain; tourism industry; healthcare

## INTRODUCTION

Tourism has historically been essential to worldwide economic development, incorporating several sectors including cultural, ecological, adventure, and health tourism. Medical tourism has arisen as a dynamic and fast expanding speciality that integrates travel with access to healthcare (Dinkoksung et al., 2023; Lee & Fernando, 2015). This expansion is propelled by innovations in healthcare technology, population changes, escalating healthcare expenses in industrialised countries, and the globalisation of healthcare services. The rise in life expectancy and an ageing demographic have exacerbated the demand for inexpensive, accessible, and high-quality healthcare services. The global medical tourism market is anticipated to accommodate almost 27 million travellers by 2023, with predicted revenues of USD 182 billion by 2025 (Giannake et al., 2023).

Malaysia has significantly advanced in establishing itself as a competitive medical tourism destination (Aziz et al., 2025; Islam, Sarwar, & Khan, 2025). These initiatives encompass infrastructure enhancement, the implementation of intelligent tourism platforms, the elevation of service quality, and the utilisation of benefits such as advantageous exchange rates, cost-effective treatment, proficient healthcare practitioners, and contemporary facilities (Ratnasari et al., 2022). Notwithstanding these achievements, Malaysia confronts increasing competition from regional counterparts such as Thailand and Singapore, both of whom have significantly invested in healthcare infrastructure and patient experience. Moreover, the post-pandemic period has heightened the demand for coordinated, high-quality service delivery that aligns with changing patient expectations (Yilmaz & Güneren, 2023). Medical tourism includes not just healthcare but also logistics, hospitality, travel coordination, and post-treatment care.

Meeting these complex needs necessitates a transition from disjointed service enhancements to a cohesive strategy, signalling that the medical tourism supply chain (MTSC) is essential. The MTSC framework includes all parties engaged in medical tourism supply networks, such as hospitals, travel agencies, housing providers, facilitators, insurance companies, and post-care providers (Lee & Fernando, 2015). An effectively integrated MTSC can guarantee uninterrupted service delivery, reduce inefficiencies, and improve patient satisfaction via coordinated care. It enhances service consistency and quality while also improving risk management, resource allocation, and responsiveness (Rahman & Zailani, 2017). By perceiving supply chain management as a strategic facilitator rather than merely a backend function, Malaysia may distinguish itself through enhanced integration, transparency, and sustained continuity of service.

Despite the growing academic interest in medical tourism, the research has primarily concentrated on marketing, service quality, or economic strategies prior to the epidemic. The COVID-19 pandemic has transformed the dynamics of global healthcare travel, highlighting the necessity to reassess the operational foundations essential for customer satisfaction and industry resilience (Wong et al., 2024). Notwithstanding this urgency, scant study has investigated the impact of supply chain management on medical tourism. Current research on tourism supply chain has predominantly focused on conventional tourism, with limited emphasis on integrated supply chain methodologies in medical tourism settings (Lee & Fernando, 2015).

In light of the growing intricacy of international healthcare travel and the escalating expectations of patients, comprehending the influence of MTSC on customer satisfaction is both pertinent and crucial. This study seeks to investigate the impact of the MTSC on perceived customer satisfaction in the context of medical tourism development. This paper is organised as follows: Section 2 provides a literature overview and conceptual framework, along with the proposed hypotheses. Section 3 delineates the research technique. Section 4 presents the findings, which are analysed in Section 5. Section 6 of the report concludes with recommendations and avenues for future research.

## LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### Customer Satisfaction towards Medical Tourism Development

Medical tourism, a rapidly expanding segment within the global tourism and healthcare industries, involves individuals travelling internationally to obtain medical care, often combining treatment with leisure or wellness activities (Shokri Garjan, Paydar, & Divsalar, 2023; Skountridaki, 2017). The growth of this industry is driven by the rising cost of healthcare in developed nations, prolonged domestic waiting times, and the increasing availability of high-quality, affordable medical services in emerging economies. According to the Global Wellness Institute (2025), the value of the medical tourism market stood at approximately USD 54.4 billion in 2020 and is projected to surpass USD 180 billion by 2025. This exponential growth reflects not only changing global healthcare dynamics but also shifting consumer preferences toward accessible and personalised care.

Southeast Asia has emerged as a significant hub in this global landscape, with Thailand, Singapore, and Malaysia positioning themselves as leading destinations. Thailand is renowned for its established elective and cosmetic surgery markets, Singapore for its high-end specialized medical services, and Malaysia for its balance of affordability, quality, and patient experience (Yilmaz & Güneren, 2023). These countries have capitalised on regional strengths, including cost advantages, skilled healthcare professionals, international hospital accreditations, and supportive governmental policies. The competitive nature of the region has spurred innovation and collaborative growth, shaping Southeast Asia into a medical tourism powerhouse.

Malaysia's initiatives into medical tourism began during the 1997 Asian Financial Crisis, when the government identified the sector as a means to stimulate economic recovery and diversify the healthcare industry (Skountridaki, 2017). Since then, Malaysia has made strategic investments in healthcare infrastructure, digital health platforms, and international accreditation to strengthen its positioning. The formation of the Malaysia Healthcare Travel Council in 2009 marked a pivotal step, coordinating national promotional strategies, facilitating hospital accreditations, and improving customer experience (Malaysia Healthcare Travel Council, 2025). Malaysia's medical tourism ecosystem is underpinned by competitive pricing, favourable currency exchange rates, short waiting times, a multilingual workforce, and a wide range of specialised services such as

fertility treatment and cardiothoracic (Cham et al., 2021).

However, success in medical tourism is not solely determined by cost and clinical outcomes. It is worth noting that customer satisfaction plays a central role in fostering patient loyalty, international reputation, and long-term industry viability. Satisfied patients are more likely to return for follow-up care, recommend services to others, and provide positive reviews, contributing significantly to destination branding and word-of-mouth marketing. As shown in comparative studies, Malaysia is perceived more favourably than some of its regional peers in areas such as trust, transparency, and overall service quality (Ratnasari et al., 2022). These perceptions enhance Malaysia's credibility as a safe and reliable medical tourism destination.

Today, Malaysia has emerged as top destination for medical tourism (Islam, Sarwar, & Khan, 2025). However, to maintain this momentum and remain competitive in the post-pandemic era, Malaysia must continue to focus on holistic customer experiences (Yilmaz & Güneren, 2023). This includes not only clinical care but also the entire supply chain in medical tourism including travel facilitation, cultural sensitivity, language support, and continuity of care post-treatment. As the global medical tourism industry becomes increasingly patient-centric, customer satisfaction will continue to be a decisive factor in shaping both market share and international standing. Ultimately, Malaysia's ability to deliver integrated, high-quality, and culturally competent care will determine its success in attracting and retaining international medical tourists.

### **Medical Tourism Supply Chain**

Supply chain management is a critical strategic function that facilitates the efficient coordination of suppliers, producers, and service providers to ensure the timely delivery of goods and services to end-users (Mokhtar, Sundram, & Shahrom, 2024). In the service industry, supply chain management extends beyond the traditional logistics of manufacturing to encompass complex networks of interdependent entities that must collaborate to deliver consistent and high-quality service experiences (Nagariya, Kumar, & Kumar, 2022). Unlike product-centric supply chains, service supply chains emphasise the flow of information, customer interaction, and coordination across intangible outputs, which makes integration and responsiveness essential for operational success and customer satisfaction.

Derived from the broader supply chain management paradigm, the tourism supply chain has emerged as a specialised area that integrates tourism-specific service providers such as hotels, transportation services, and destination management organizations (Dinkoksung et al., 2023). The tourism supply chain is inherently more fragmented and complex than supply chains in traditional sectors due to the high degree of service heterogeneity and the involvement of independently operating stakeholders. An extension of the tourism supply chain, the medical tourism supply chain (MTSC) represents a sophisticated interdisciplinary construct that connects the healthcare and tourism industries, requiring seamless coordination across diverse service domains (Rahman & Zailani, 2017).

The MTSC comprises a wide network of entities including hospitals, pharmaceutical suppliers, travel and logistics companies, insurance providers, and accommodation services. Those supply chain members collaborate to deliver comprehensive medical tourism experiences to domestic and international patients. The supply chain plays a pivotal role in healthcare by ensuring the availability, quality, and reliability of medical services (Lee & Fernando, 2015). In the context of medical tourism, this function becomes even more critical as it involves cross-border coordination, cultural sensitivity, and assurance of both medical and non-medical service standards (Shokri Garjan, Paydar, & Divsalar, 2023).

In the same vein, MTSC can be conceptualised as a system that sources, organises, funds, and distributes medical services while managing the associated flow of information and finances from service providers to patients (Fongtanakit et al., 2019). Unlike manufacturing supply chains, the MTSC prioritises dimensions such as treatment cost, waiting time, privacy, and service reliability. These factors are central to medical tourists' decision-making processes. These components are not only operational metrics but also form the foundation for building trust, enhancing patient satisfaction, and sustaining competitive advantage (Aydin et al., 2024).

One of the distinguishing characteristics of the MTSC is its cross-sectoral integration. At least five core service sectors which are hospitals, pharmaceuticals, accommodation, transportation, and insurance must operate in

synchrony to deliver seamless medical tourism experiences (Aydın et al., 2024; Yilmaz & Güneren, 2023). Each of these sectors represents a critical node in the supply chain and contributes uniquely to value creation. For instance, hospitals and medical professionals provide core treatment services, while transport and accommodation ensure logistical convenience and comfort, and insurance mechanisms mitigate financial risk. Advertising and travel facilitation agencies further support awareness-building and service personalisation.

In emerging economies like Malaysia, the development of a robust MTSC has been instrumental in positioning the country as a competitive medical tourism destination. Factors such as cost-effective medical care, internationally accredited facilities, favourable exchange rates, and strong government backing have enabled Malaysia to attract growing numbers of international patients (Cham et al., 2021). The MTSC in such contexts must not only ensure clinical excellence but also deliver customer-centric services that meet the diverse cultural, informational, and logistical needs of global medical travellers (Lee & Fernando, 2015).

However, despite its growing importance, scholarly research on the MTSC remains relatively underdeveloped. Much of the existing literature focuses on individual components such as service quality or marketing, often overlooking the integrated nature of supply chain interactions within medical tourism (Aydın et al., 2024; Lee & Fernando, 2015). A more holistic understanding of the MTSC is needed to study the interdependencies among stakeholders, the coordination mechanisms that enable seamless service delivery, and the systemic impact on patient satisfaction and destination competitiveness.

To achieve long-term sustainability and resilience, organisations involved in medical tourism must adopt comprehensive supply chain practices that improve efficiency, enhance service integration, and align with customer expectations (Mokhtar, Anindita, & Suhaimi, 2023). Improved collaboration across the supply chain not only reduces operational costs and inefficiencies but also strengthens Malaysia's competitive positioning as a trusted medical tourism hub. As global demand for affordable and high-quality healthcare continues to grow, the MTSC will play an increasingly strategic role in enabling nations to capture value and deliver exceptional care experiences across borders.

### **Destination Competitiveness**

Destination competitiveness in medical tourism as a country's ability to attract and retain medical tourists by delivering high-quality care that meets customer expectations (Cham et al., 2021; Kani et al., 2017). This competitiveness is affected by things like the number of foreign tourists, the growth of the tourism industry, the level of experience of medical professionals, and other more general factors in the industry. Malaysia has started a number of strategic projects to make sure that it stays a major centre for medical tourism (Islam, Sarwar, & Khan, 2025). These include suggesting the creation of healthcare-free zones to streamline services, promoting ongoing education and research among medical professionals, and expanding the number of internationally accredited healthcare providers (Yilmaz & Güneren, 2023). Malaysia is a popular destination for medical tourists on a budget because it is cheaper than places like Singapore, where it has become a major player in the global market by offering high-quality care at a low cost (Aziz et al., 2025; Islam, Sarwar, & Khan, 2025).

The Malaysian government started the Malaysia Healthcare Travel Council (MHTC) in 2009 to lead the growth of the healthcare travel industry and promote Malaysia around the world. It also started the official medical tourism portal to help with these goals. Joint campaigns with the Ministry of Health, the Ministry of Tourism, Malaysia Airlines, and other important groups have made Malaysia more visible around the world. Even with these successes, the industry still has problems. Countries must understand tourists' needs, wants, and behaviour because there are more and more wellness-focused travel destinations, especially in mountain-based health tourism (Dinkoksung et al., 2023). The Russian Federation exemplifies how legal constraints, regulatory obstacles, and quality assurance challenges can hinder the advancement of sustainable medical tourism (Daykhes et al., 2020). To make a destination more competitive, a multi-pronged approach is needed that deals with structural and policy-related problems, makes healthcare more affordable, increases digital outreach, and raises healthcare standards (Kani et al., 2017). Countries like Malaysia can keep growing their medical tourism industries this way, which will make it easier for people to get medical care and have good effects on the economy. Hence, this study hypothesises that:

**Hypothesis 1:** Destination competitiveness has a positive effect on customer satisfaction in medical tourism.

## Customer Awareness

Customer awareness in the growth of medical tourism in Malaysia means how well potential medical tourists know about the country's healthcare services, such as the treatments available, their quality, and the benefits of getting them. This awareness includes knowing that Malaysia is a popular place for medical tourism, how good the healthcare professionals are, how good the facilities are, and how good the overall customer experience is (Nilashi et al., 2019). Research has pinpointed numerous elements that affect customer awareness and decision-making. Aziz et al. (2025) discovered that competitive pricing, the availability of skilled human resources, continuous research and development, infrastructure, and supportive government institutions significantly influence tourists' intentions to select Malaysia as a destination. Malaysian government is trying to promote medical tourism as part of its national development plans (Ormond, Mun, & Khoon, 2014). Furthermore, trust and good customer experiences are vital for getting people to come back (Giannake et al., 2023; Skountridaki, 2017). Even with these strengths, there are still problems, like the fact that people do not often think of domestic medical tourism, where customers get treatment in their own country, because medical tourism is usually thought of as only international travel.

Also, getting customers to know more about the pros and cons of our services is important for building trust and helping them make smart choices (Abou-Shouk & Soliman, 2021). Many potential customers do not know enough about safety standards, quality assurance, and legal protections in different places, which can make them less likely to use the sector (Daykhes et al., 2020; Nilashi et al., 2019; Skountridaki, 2017). To close this gap, businesses need to use good marketing and communication strategies. Relationship marketing, which builds trust, commitment, and cooperation between providers and customers, has been shown to be a good way to improve customer loyalty and satisfaction. Additionally, cutting-edge technologies like blockchain could help make medical tourism transactions more open and trustworthy by making sure that information is shared in a way that is safe, verifiable, and clear (Kontogianni et al., 2024). For Malaysia and other places that want to grow their medical tourism industries in a sustainable way, it is crucial to deal with problems related to customer awareness, domestic recognition, marketing strategies, and technological integration. This will lead to more trust, satisfaction, and economic benefits. Hence, this study hypothesises that:

**Hypothesis 2:** Customer awareness has a positive effect on customer satisfaction in medical tourism.

## Service Quality

In medical tourism, service quality is how customers feel about the healthcare services at a destination. This includes things like empathy, tangibility, efficiency, safety, and technical competence (Dinkoksung et al., 2023; Rahman & Zailani, 2017; Sultana et al., 2014). This complex idea is very important for attracting and keeping medical tourists, who depend a lot on the healthcare provider's reputation and ability to provide safe, effective care. But customers who do not know much about medicine may find it hard to judge technical aspects of care, like how accurate a diagnosis is or how skilled a surgeon is. To meet and exceed customer expectations, healthcare providers and destinations must focus on consistently providing excellent service in all areas (Nagariya, Kumar, & Kumar, 2022). Studies have demonstrated that exceptional service positively affects customer satisfaction, loyalty, and the propensity to revisit or recommend a destination, thereby fostering the expansion of the medical tourism industry (Dinkoksung et al., 2023; Sultana et al., 2014). Also, high-quality service helps healthcare organisations build a strong brand image and is closely linked to customer trust, perceived value, and positive word-of-mouth.

Service quality in medical tourism is very important, but it has a lot of problems. Mishra and Sharma (2021) underscore the necessity for a robust framework to evaluate service quality in this specific context, advocating for the SERVQUAL model, which measures customer expectations and perceptions across five service dimensions. The quality of treatment, the knowledge of the medical staff, the safety of the medication, and the focus on service all have a big effect on how satisfied and loyal customers are, which in turn affects how attractive a destination is and how likely they are to return (Anastasiadou & Masouras, 2024). Another important factor is how accreditation helps healthcare providers meet recognised quality standards, which builds customer trust and confidence. Overall, the quality of service is still a key part of the growth of medical tourism. It not only makes customers satisfied and loyal, but it also gives the destination a competitive edge in a growing global

market (Wong et al., 2024). Healthcare providers and destination managers must prioritise service excellence, employing dependable measurement instruments, stringent quality control, and ongoing improvement to satisfy the changing requirements and anticipations of medical tourists. Hence, this study hypothesises that:

**Hypothesis 3:** Service quality has a positive effect on customer satisfaction in medical tourism.

### Islamic Brand Image

The link between the Islamic brand image and the rise of medical tourism in Malaysia has become a topic of growing study. The Islamic image of a brand has a big impact on how medical tourists see the quality of service, which in turn influences their pleasure, perceived value, and plans for future behaviour. Moreover, a strong brand image can assist Malaysian hospitals or medical service providers do better in the medical tourism sector (Zailani et al., 2016). Malaysia has done a lot to move in this direction, such making sure that healthcare professionals know about Islamic ideas, providing halal food, and making sure there are spaces to pray. This is even more enticing now that halal-certified drugs and treatments are available. Malaysia was among the first country to develop a medical tourism standard to make sure that pharmaceuticals are safe, work, and obey Islamic practices (Kamassi, Abdul Manaf, & Omar, 2021). These initiatives are aimed to address the growing demand for healthcare that respects Shariah law and make Malaysia's Islamic brand stronger in the medical tourism business around the world.

There is a demand for halal certificates for healthcare and hospitality providers that are accepted around the world but can be changed to fit local needs. This is because people interpret and implement Islamic rituals in various manners, however this uniformity can help build trust in brands and make them more credible (Kamassi, Abdul Manaf, & Omar, 2021). Lastly, we need to educate customers further. While Islamic branding has a good impact on how Muslim customers see things, many of them still do not know what it means or why it is important. Increasing awareness can assist Muslim customers in making informed choices and locating medical treatment that aligns with their values (Iranmanesh et al., 2018; Zailani et al., 2016). To make Malaysia's Islamic brand image better and help it compete better in the medical tourism market, these opportunities need to be strengthened. Hence, this study hypothesises that:

**Hypothesis 4:** Islamic brand image has a positive effect on customer satisfaction in medical tourism.

### Medical Professionals

To ensure optimal customer care and safety, it is essential that they get attention from highly qualified medical professionals. As professionals, they are capable of making accurate diagnoses, formulating effective treatment programs, and performing complex medical procedures (Skountridaki, 2017). These specialists frequently generate innovative medical concepts, resulting in enhanced health and expanded medical knowledge (Davies et al., 2022). Their role is significantly more critical in the context of medical tourism. Medical tourists frequently journey overseas to obtain specialised treatments or advanced technologies that are not accessible in their home nations (Islam, Sarwar, & Khan, 2025). The presence of well-trained healthcare workers at a location significantly enhances its credibility and desirability, influencing public trust and satisfaction. A considerable number of physicians and nurses in Malaysia have received training and successfully completed examinations in foreign nations (Ratnasari et al., 2022; Nilashi et al., 2019). They operate in several domains inside urban hospitals and rural clinics. Individuals are drawn to Malaysia for its superior, cost-effective healthcare due to concerns over privacy, comfort, and professional standards.

Malaysia possesses an effective healthcare system; nonetheless, it faces challenges in recruiting and retaining highly skilled physicians and nurses. Malaysia possesses numerous trained professionals; however, it must continue to spend in training new personnel to meet the growing global demand for medical tourism services (Aziz et al., 2025; Ormond, Mun, & Khoon, 2014). Educational institutions, healthcare providers, and governmental bodies must collaborate to provide a sufficient supply of qualified professionals. To attract and retain top talent, organisations may provide competitive compensation, enhance medical training programs, and cultivate an appealing work environment (Nikbin et al., 2019). To uphold Malaysia's esteemed reputation in the international medical tourism sector, it is imperative to address these labour issues. This will ensure the industry's

longevity, safeguard customers, and maintain high-quality service consistently. Malaysia can maintain its leading position in medical tourism by consistently creating strategies and investing in its workforce. Hence, this study hypothesises that:

**Hypothesis 5:** Medical professionals have a positive effect on customer satisfaction in medical tourism.

The conceptual framework of this study is depicted in Figure 1.

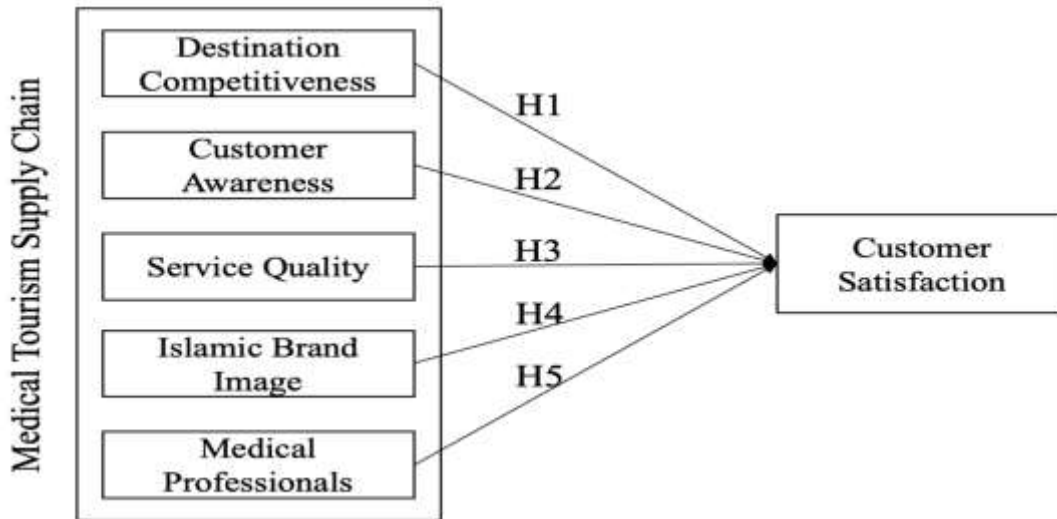


Figure 1: Research Framework

## METHODOLOGY

This study utilised a quantitative research design to investigate the impact of medical tourism supply chain (MTSC) towards customer satisfaction on the development of medical tourism in Malaysia. A convenience sampling strategy was employed to choose respondents capable of articulating their thoughts regarding the aspects influencing customer satisfaction in medical tourism. The targeted group comprised persons with direct or indirect involvement in medical tourism services in Malaysia, including international medical tourists, local customers pursuing private healthcare, and healthcare personnel in prominent medical tourism locales such as Kuala Lumpur and Selangor. This non-probability sampling method was chosen for its efficacy in reaching pertinent respondents who were willing and accessible to engage.

Data were gathered using a structured questionnaire aimed at obtaining demographic information and assessing impressions of MTSC, and customer satisfaction. The questionnaire comprised three primary sections: (1) demographic information, (2) MTSC (destination competitiveness, customer awareness, service quality, Islamic brand image, and medical professional), and (3) customer satisfaction. Each of the measurement constructs in the survey had four to five items, which were measured using a five-point Likert-type scale ranging from strongly agree (5) to strongly disagree (1). The measurement constructs used were adapted from previous studies. The dependent variable comprised customer satisfaction were adapted from Westbrook and Oliver (1981). The measurement constructs used for the five independent variables of the MTSC which are destination competitiveness (adapted from Kani et al., (2017)), customer awareness (adapted from Abou-Shouk & Soliman (2021)), service quality (adapted from Sultana et al. (2014)), Islamic brand image (adapted from Zailani et al. (2016)), and medical professional (adapted from Nikbin et al. (2019)), were also adapted from previous studies.

A pilot study involving 30 participants was executed to evaluate the clarity, reliability, and validity of the questionnaire. Minor revisions were implemented to enhance the phrasing and coherence of the questions based on the comments received. The final survey was disseminated via Google Forms, with links circulated by email, social media channels, and hospital customer liaison staff. The questionnaire was provided in both English and Malay to cater to respondents' language preferences and enhance accessibility.

The analysis of data was conducted with SPSS version 26. Descriptive statistics summarised the demographic

traits of respondents, while multiple regression analysis was employed to examine the proposed links among service quality, destination image, Islamic branding, and customer satisfaction. The internal consistency of each construct was evaluated using Cronbach's alpha to ensure the trustworthiness of the measuring instruments.

## FINDINGS

### Demographic Profile

Table 1 delineates the demographic attributes of the 220 participants who engaged in the study on medical tourism in Malaysia. The bulk of respondents were female (N=150, 64.9%), while male respondents constituted 30.3% (N=70). The majority of respondents, 46.36%, were aged 21 to 30 years, followed by 42.27% in the 31 to 45 age range, 8.1% aged 46 to 60 years, and merely 3.2% over 60 years old. Regarding marital status, 52.7% (N=116) were single, 44.5% (N=98) were married, and a minor segment (2.7%, N=6) defined as other. When enquired about their employment sector, the majority of respondents (67.3%, N=148) were engaged in the private sector, followed by 18.2% (N=40) in government, 9.1% (N=20) as self-employed, and 5.5% (N=12) in other sectors. Concerning monthly income, 32.7% (N=72) received between RM2,001 and RM3,000, and 31.8% (N=70) earned between RM3,001 and RM4,000. A lesser percentage earned below RM2,000 (12.7%, N=28), between RM4,001 and RM5,000 (10.9%, N=24), and over RM5,000 (11.8%, N=26).

Table 1: Demographic Profile

Characteristics	Categories	Frequency	Percentage (%)
Gender	Male	70	30.3
	Female	150	64.9
Age Group	21 to 30 years old	102	46.36
	31 to 45 years old	93	42.27
	46 to 60 years old	18	8.1
	Above 60 years old	7	3.2
Marital Status	Married	98	44.5
	Single	116	52.7
	Others	6	2.7
Working Sector	Self-employed	20	9.1
	Government	40	18.2
	Private	148	67.3
	Others	12	5.5
Income	Below than RM2000	28	12.7
	RM2,001 - RM3,000	72	32.7
	RM3,001 – RM4,000	70	31.8
	RM 4,001 – RM 5,000	24	10.9
	More than RM5,000	26	11.8

### Preliminary Data Analysis

All of the variables have Cronbach Alpha values between 0.7 and 0.9. This shows that the questionnaires that



were used were valid and accurate. Data checking steps were taken before the final data analysis was done. As part of these steps, incomplete data was checked for, outliers were found, normality was tested, and multicollinearity was evaluated. Mean substitution was used to keep as many answers as possible when data was missing. A boxplot was used to look for outliers, and the mean value of each item was compared to its 5% clipped mean (Pallant, 2016). There were no extreme outliers in the dataset, so none of the answers had to be changed, removed, or transformed. Also, the dataset did not have any extreme skewness or kurtosis. Both values were within the acceptable range of -1 to +1, as stated by Hair et al. (2014). Also, the multicollinearity test showed that there was no multicollinearity between the independent variables, as shown by tolerance values higher than 0.10 and diversity inflation factors (VIF) lower than 10.

### Multiple Regression Analysis

The regression analysis indicates that the independent variables collectively explain 65.1% of the variance in customer satisfaction in medical tourism development ( $R^2 = 0.651$ ,  $F = 83.177$ ,  $p < 0.001$ ). All independent variables, namely medical professionals ( $\beta = 0.236$ ,  $t = 3.906$ ,  $p = 0.001$ ), customer awareness ( $\beta = 0.226$ ,  $t = 3.664$ ,  $p = 0.001$ ), destination competitiveness ( $\beta = 0.220$ ,  $t = 4.018$ ,  $p = 0.001$ ), service quality ( $\beta = 0.148$ ,  $t = 2.285$ ,  $p = 0.023$ ), and Islamic brand image ( $\beta = 0.140$ ,  $t = 2.280$ ,  $p = 0.024$ ) were statistically significant predictors of perceived customer satisfaction, supporting all proposed hypotheses. The details of the regression analysis are illustrated in Table 2.

Table 2: Regression Analysis

Dependent Variable: Customer Satisfaction of Medical Tourism Development				
Independent Variables	Standardised Coefficient (BETA)	t	Sig.	Hypothesis
Destination Competitiveness	0.220	4.018	.001	Accepted
Customer Awareness	0.226	3.664	.001	Accepted
Service Quality	0.148	2.285	.023	Accepted
Islamic Brand Image	0.140	2.280	.024	Accepted
Medical Professionals	0.236	3.906	.001	Accepted
F value	83.177			
Sig.	.000 <sup>b</sup>			
R square	.651			

## DISCUSSION

The regression analysis demonstrates that all five independent variables, destination competitiveness, customer awareness, service quality, Islamic brand image, and medical professionals significantly and positively impact customer satisfaction in the medical tourism development in Malaysia. Notably, these variables represent critical components within the broader framework of the medical tourism supply chain (MTSC), highlighting the central role of an integrated supply chain in fostering superior patient experiences. The overall model exhibits strong explanatory power, accounting for 65.1% of the variance in customer satisfaction ( $R^2 = .651$ ,  $F = 83.177$ ,  $p < .001$ ), indicating that these interconnected MTSC elements collectively predict satisfaction effectively.

Medical professionals, with the highest standardized coefficient ( $\beta = 0.236$ ), are the cornerstone of the MTSC's healthcare delivery segment. Their expertise, competence, and professionalism directly influence clinical outcomes and patient trust, which are fundamental to satisfaction in medical tourism. This finding aligns with Cham et al. (2021), who emphasise that healthcare providers' capabilities underpin the credibility of medical tourism destinations. Within the MTSC, medical professionals represent the primary service providers whose quality strongly shapes the overall patient journey.

Customer awareness ( $\beta = 0.226$ ) corresponds to the information dissemination and marketing function within

the MTSC. Effective communication and promotion by facilitators, travel agencies, and tourism boards ensure that prospective patients are well-informed about treatment options, costs, and destination attributes. This transparency and accessibility foster confidence and informed decision-making, critical to attracting and retaining international patients. As Shokri Garjan, Paydar, & Divsalar (2023) note, customer awareness is a key driver of satisfaction and repeat visits, underscoring the importance of supply chain actors who manage information flow. Moreover, destination competitiveness ( $\beta = 0.220$ ) reflects the MTSC's infrastructural and logistical dimensions, encompassing healthcare facilities, accommodation providers, transportation networks, and ancillary services. The capacity of a destination to offer seamless, affordable, and high-quality experiences depends on the efficient coordination of these entities. This factor emphasizes the need for integrated supply chain management that aligns healthcare delivery with tourism infrastructure to meet diverse patient needs and expectations, enhancing destination appeal and satisfaction.

Service quality ( $\beta = 0.148$ ) captures the operational excellence of the MTSC's various stakeholders, including hospitals, hospitality providers, and support services. Attributes such as empathy, reliability, responsiveness, and safety are embedded in service delivery processes that must be standardized and continuously improved across the supply chain. Mishra and Sharma (2021) and Sultana et al. (2014) highlight that these service dimensions are pivotal for positive patient experiences, and thus, for customer satisfaction within medical tourism. Nevertheless, Islamic brand image ( $\beta = 0.140$ ) represents the cultural and religious alignment within the MTSC, particularly relevant in Malaysia's context. This dimension involves the provision of halal-certified medical treatments, culturally sensitive services, and Muslim-friendly hospitality features integrated across the supply chain. This branding enhances appeal to Muslim patients, creating a unique value proposition. Research by Kani et al., (2017) confirms the importance of cultural branding as a supply chain element that can differentiate a destination in a competitive market, though there remains scope for improving consistency and certification standards across providers.

Collectively, these findings affirm that the MTSC is a multifaceted construct whose components, spanning clinical expertise, information dissemination, infrastructure, service operations, and cultural branding must be strategically managed to optimise customer satisfaction. For policymakers and practitioners, this underscores the necessity of a holistic, integrated supply chain approach that not only elevates medical care but also synchronizes the supporting services and branding efforts. Such integration ensures a seamless, trustworthy, and culturally attuned experience that is critical to Malaysia's sustained competitiveness and growth in the global medical tourism industry.

## CONCLUSION

This study aims to examine the impact of medical tourism supply chain (MTSC) towards customer satisfaction in medical tourism development, focusing on destination competitiveness, customer awareness, service quality, Islamic brand image, and the expertise of medical professionals. Using quantitative analysis, the findings revealed that all five variables had a significant positive impact on customer satisfaction, with medical professionals being the most influential. The high R-square value (0.651) indicates a strong model fit, confirming the collective importance of these variables in shaping perceptions and satisfaction among medical tourists. These results offer actionable insights for stakeholders seeking to enhance Malaysia's competitiveness in the global medical tourism market.

The presence of highly trained healthcare professionals builds confidence among customers, while service quality and Islamic brand image cater to diverse medical and cultural needs, especially for Muslim tourists. Customer awareness and destination competitiveness also play vital roles in attracting international customers. For Malaysia to sustain its growth in this industry, strategic investments in healthcare excellence, certification standards, personalized services, and effective branding are essential. Equally, consistent messaging around halal compliance and cultural sensitivity can elevate Malaysia's image as a leading medical tourism destination. These findings align with existing literature and underscore the need for continuous improvement in both technical and experiential dimensions of care.

Future research should expand on these findings by examining customer satisfaction and experience in more depth. Institutions like Prince Court Medical Centre and the Sunway Medical Centre provide exemplary models

of personalised care and regular customer feedback collection. Investigating areas such as language support, cultural experiences, and ease of navigation through surveys and interviews can help fine-tune service delivery. Additionally, comparative cost analysis between Malaysia and other leading destinations like Thailand and Singapore can offer valuable insights into Malaysia's competitive advantage.

Further research should also explore the role of digital health technologies such as telemedicine and mobile health apps to maintain cross-border continuity of care. Regulatory frameworks and ethical considerations, particularly around customer rights and hospital accreditation, remain key to ensuring safe and standardized care. Finally, research into the broader impact of medical tourism on local healthcare access, workforce strain, environmental sustainability, and economic development is crucial. By addressing these areas, Malaysia can not only enhance customer outcomes and satisfaction but also develop a resilient, ethical, and sustainable medical tourism industry for the future.

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