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Interrelations of service quality and service loyalty dimensions in medical tourism

A structural equation modelling approach

Bikash Ranjan Debata
Department of Marketing, Rourkela Institute of Management Studies, Rourkela, India
Bhaswati Patnaik
Department of Humanities and Social Sciences, National Institute of Technology Rourkela, Rourkela, India
Siba Sankar Mahapatra
Department of Mechanical Engineering, National Institute of Technology, Rourkela, India, and
Kumar Sree
Department of Marketing, Rourkela Institute of Management Studies, Rourkela, India

Abstract

Purpose – The purpose of this paper is to identify the dimensions of service quality as well as of service loyalty in the context of medical tourism. It seeks to demonstrate the conceptualization of medical tourism service loyalty (MTSL) construct. This research also attempts to examine the effect of service quality dimensions on service loyalty dimensions of medical tourism.

Design/methodology/approach – The dimensions of service quality as well as of service loyalty are identified using an exploratory factor analysis. Next, the reliability and validity of the quality factors and loyalty factors are established through confirmatory factor analysis using AMOS 18.0 version. The related hypotheses are tested using structural equation modeling (SEM).

Findings – The paper identifies eight-factor construct for medical tourism service quality and three-factor construct for MTSL. It is found that the treatment satisfaction dimension of service quality has positive and significant impact on MTSL. It is also observed that, overall, medical tourism service quality has positive impact on MTSL.

Practical implications – These dimensions of service quality should be viewed as the levers of improving perceived service quality with respect to medical tourism. Examining the service quality dimensions' impact on customer loyalty for medical tourism sector can offer the industry valuable insights regarding which aspects of the service to focus on in order to improve medical tourist's satisfaction and loyalty toward the firms.

Originality/value – This paper introduces the concept of service quality and service loyalty in medical tourism sector. In conceptualizing MTSL, the authors propose an integration of behavioral measures, attitudinal measures and cognitive measures. The interrelationship between the service quality construct and medical loyalty construct was established using SEM. This is useful for the healthcare manager to measure the medical tourist's perceptions of service quality on these dimensions as related to medical tourism performance.

Keywords Performance management, Customer services quality

Paper type Research paper

1. Introduction

Medical tourism is a growing phenomenon, which involves traveling across international borders in order to obtain healthcare. Medical tourists are generally residents of developed countries and primarily come from USA, Canada, Great Britain, Western Europe, Australia, and Middle East. However, now people from other countries of the world are also seeking out places where they can both enjoy a vacation and obtain quality medical treatment at a reasonable price. India as a medical tourism destination lures medical tourists predominantly because of its mysticism, spirituality, exotic locales, rich history and culture. A study of India's medical tourism sector conducted jointly by the Confederation of Indian Industry and McKinsey & Company revealed that there exists immense potential to attract one million medical tourists per annum, who would contribute USD 5 billion to the economy. In recent times, the privatization and globalization of the healthcare sector in India underlines the fact that the country is an attractive, affordable and preferred global medical tourism destination. The competitive advantage of India lies in its provision of world-class healthcare at substantially less cost, the availability of the latest technology and competent specialists, and above all, the attaining of comparable success rates. Based on 2002 data, an inpatient knee surgery would cost USD 10,000 in the USA and just USD 1,500 at hospitals in India (Mattoo and Rathindran, 2006). The cost differential for medical treatment between developed nations and India is extraordinary. Treatment in India starts at around a tenth of the price of comparable treatment in the USA or Britain. However, besides emerging as a global medical tourism destination, it faces cut-throat competition from south-east Asian countries such as Thailand, Singapore and Malaysia. In 2005, out of 500,000 medical tourists from the USA, 55,000 medical tourists traveled to Bumrungrad hospital in Bangkok, Thailand (Cohen, 2011). An increasing number of medical tourists seek value for money during their treatment. Therefore, medical tourism destinations offer not only cost effective services but also a high quality of care. Medical tourists seeking treatment in India are concerned about healthcare safety. To provide a guarantee of service quality for medical tourists in India, the Joint Commission International (JCI) has already accredited the quality and safety of healthcare facilities in 11 Indian hospitals. The Indian pharmaceutical sector has gained international recognition and has contributed to a large extent to the growth of medical tourism in India. The country is a net exporter of healthcare services by providing a range of services such as open-heart surgery, pediatric heart surgery, hip and knee replacement, bone marrow transplant, bypass surgery, breast lump removal, cosmetic surgery, dentistry, cataract surgery, in vitro fertilization and cancer therapy to medical tourists.

The aforesaid promising factors have been responsible for the growth of medical tourism in India. However, the medical tourism sector faces various challenges that might be of prime concern for medical tourists in choosing the most desirable medical tourism destination. The main challenges are: an image of poverty and unhygienic conditions (Begde, 2008); safety and security issues; xenophobia reflecting cultural as well as psychological barriers; unfavorable government regulations (Kalshetti and Pillai, 2008); competition from neighboring countries (Gopal, 2008); lack of encouragement from various stakeholders to promote medical tourism; poor coordination among various players in the industry such as airline operators, hotels and hospitals (Chakravarthy *et al.*, 2008); lack of infrastructural facilities; inadequate healthcare standardization; inadequate medicine insurance back-up and 11. Poor practice of consumer redressal forums (Kaur *et al.*, 2008). Today, quality issues in healthcare have

drawn significant attention. The concept of healthcare service quality has gradually developed to include the views of patients (Yeh, 2010). Padma *et al.* (2009) termed service quality as "perceived service quality" from the point of view of patients. For these reasons, medical tourists' perception of healthcare services in India is now a useful metric for evaluating medical tourism service quality (MTSQ). Several studies have been carried out to understand patients' perceptions of satisfaction while assessing the quality of the healthcare system (Andaleeb, 2008; Antoniotti *et al.*, 2009; Boos *et al.*, 2001; Gold and Woodridge, 1995; Haddad *et al.*, 1998; Hansen *et al.*, 2008; Sower *et al.*, 2001). It has been identified that perceived healthcare service quality differs from the traditional service quality in a number of dimensions such as physical environment, interaction/courtesy, treatment cure, technical quality care competency, accessibility, promptness (minimum waiting time), finance factor (cost), and facility premises (Zifko-Baliga and Krampf, 1997; Tam, 2007; Thompson, 1983; Tomes and Chee Peng, 1995; Evans and Lindsay, 1999; Dansky and Miles, 1997; Carman, 2000; Risser, 1975; Ware *et al.*, 1983; Baker, 1991; Rao *et al.*, 2006). The abovementioned dimensions of healthcare service quality are extended to investigate the medical tourist's perception of service quality. In order to check the significance of these dimensions for MTSQ, the following hypotheses are proposed:

H1. Accessibility is a significant dimension of MTSQ.

H2. Treatment satisfaction is a significant dimension of MTSQ.

H3. Courtesy is a significant dimension of MTSQ.

H4. Physical environment is a significant dimension of MTSQ.

H5. Technical quality care is a significant dimension of MTSQ.

H6. Promptness is a significant dimension of MTSQ.

H7. Facility premises is a significant dimension of MTSQ.

H8. Finance factor is a significant dimension of MTSQ.

It is evident from the service literature that there is a paucity of articles investigating service loyalty. Measuring service loyalty in healthcare is quite difficult due to rare and infrequent purchases (Oppermann, 1999; Jago and Shaw, 1998) and clandestine behavior regarding intentions to revisit in the future (Jones and Sasser, 1995). An extensive literature review supported the concept that loyal customers are the most likely to publicize the company and its products through positive word of mouth and through a desire to maintain the relationship (Hennig-Thurau *et al.*, 2002; Bloemer and De Ruyter, 1998). There are no articles on the measurement of service loyalty for the medical tourism sector. Primarily, the medical tourism studies to date have not addressed and examined the construct of service loyalty. For this research, therefore, it is crucial to develop an all-encompassing measurement for medical tourism service loyalty (MTSL) considering various scales developed for the service loyalty construct. In conceptualizing MTSL, an integration of behavioral, attitudinal and cognitive measures is proposed. Behavioral loyalty measure is expressed by the actual revisiting of the service provider,

brand allegiance, price elasticity, share of category, number of times a service is purchased in a given period, price until switching, exclusive purchase, hard-core loyalty, repeat purchase probability, and share of category requirements (Russell-Bennett *et al.*, 2007; De Wulf and Odekerken-Schröder, 2003; Uncles *et al.*, 2003; Rundle-Thiele and Mackay, 2001). The attitudinal loyalty measures include attributes such as word of mouth, complaining behavior, purchase intentions (Kumar and Reinartz 2006; De Ruyter *et al.*, 1998), willingness to recommend (Selnes, 1993), and commitment toward the service provider (Jacoby and Chestnut, 1978). The cognitive loyalty component includes attributes like preference for the service organization (the service that first comes to mind when making a purchase decision), the belief that the service organization provides the best offer and suits customer needs (Harris and Goode, 2004; Newman and Werbel, 1973; Bellenger *et al.*, 1976; Dwyer *et al.*, 1987), the product or service that is a customer's first choice among alternatives (Ostrowski *et al.*, 1993) and price tolerance (Anderson, 1996; Fornell *et al.*, 1996). Based on the review of the aforesaid literature, the MTSL construct is expressed in three dimensions for the scale construction process. The following hypotheses are set to test the significance of MTSL dimensions:

H9. Behavioral Loyalty (BHL1) is a significant dimension of MTSL.

H10. Attitudinal Loyalty (BHL2) is a significant dimension of MTSL.

H11. Cognitive Loyalty (BHL3) is a significant dimension of MTSL.

The increasing recognition of perceived service quality has been attributed to its positive effects on service loyalty, which in turn affect corporate business performance such as profitability and market share (Rust and Zahorik, 1993; Zeithaml, 2000). The effect of different service quality dimensions on service loyalty have also been tested in different service contexts such as technology-based banking (Ganguli and Roy, 2011), store loyalty card (Noordhoff *et al.*, 2004), tourism (Baloglu, 2001), fast food (Tat *et al.*, 2011), package tour operators (Andreassen and Lindestad 1998), call centers (Dean, 2002), multi-service scenario (Zeithaml *et al.*, 1996) and internet services (Parasuraman *et al.*, 2005). The quality of a customer's service experience aids the development of positive value perceptions about the service provider leading to loyalty. However, causal relationships with MTSQ and service loyalty have only been conceptualized, and not tested in a real situation. Additionally, conceptual clarification, distinctions, and logical linkages among the constructs have been lacking. Consequently, an integrated model using structural equation modeling (SEM) is proposed to clarify these interrelationships. Hence, the following hypotheses are proposed to establish the linkage between MTSQ and MTSL:

H12. MTSQ has a positive effect on MTSL.

H13. Treatment satisfaction has direct and positive influence on MTSL.

H14. Accessibility has direct and positive influence on MTSL.

H15. Courtesy has direct and positive influence on MTSL.

H16. Physical environment has direct and positive influence on MTSL.

H17. Facility premises has direct and positive influence on MTSL.

H18. Finance factor has direct and positive influence on MTSL.

H19. Technical quality care has direct and positive influence on MTSL.

H20. Promptness has direct and positive influence on MTSL.

2. Literature review

Quality issues in healthcare have gained increasing attention from researchers. Service quality, defined as patients' self-reported experience of care, is a useful metric for evaluating healthcare quality. Service quality in healthcare is measured by asking patients about their experience. Several tools have emerged to continuously monitor healthcare processes and to improve and control different areas of care. In developing countries, the main quality concern has been the accessibility to healthcare services (Mera, 2002). In the last few decades, patients have emerged as the core concern for healthcare provision and quality assurance efforts (Aharony and Strasser, 1993; Sitzia and Wood, 1997). Improving patient perceptions of service quality has become a central concern to health managers, policy makers and researchers in recent years (Otani and Harris, 2003; Rao *et al.*, 2006). Moreover, patients' perceptions of healthcare quality are critical to a healthcare organization's success because of its influence on satisfaction and hospital profitability (Santouridis and Trivellas, 2010; Koska, 1990; Donabedian, 1966; Williams and Calnan, 1991). Padma *et al.* (2009) termed service quality as "perceived service quality" from the point of view of patients. Consequences of low-perceived quality of care include poor compliance with treatment and advice, failure to pursue follow-up care and dissuading others from seeking care (Andaleeb *et al.*, 2007). A study by Lin *et al.* (2010) in Taiwan hospital-based emergency departments examined patient satisfaction and found three service dimensions (perceived waiting times, service quality of medical professionals and physical environments). Hall (2011) identified some of the interrelationships between different areas of medical tourism and builds a relationship to the concepts of wellness and illness and the extent to which regulation encourages individuals to engage in cross-border purchases of health services and products.

Abramowitz *et al.* (1987) have proposed ten dimensions like medical care, housekeeping, nursing care, nurses' aides, staff explanations of procedures and treatment, noise level, food, cleanliness, and portering services, using statistical techniques such as factor analysis, and proved satisfaction as a multi-dimensional construct. According to Nwankwo *et al.* (2010), patients perceive various factors such as the nursing, food quality, technical facilities, and cleanliness and other direct customer service-related activities as important in the healthcare sector. Hasin *et al.* (2001) found in their study that communication, responsiveness, courtesy, cost and cleanliness are the major concerns for the service quality in hospitals in Thailand. Tung and Chang (2009) carried out a research in the Taiwan healthcare system and found that the doctor's technical skill is the most critical attribute followed by the doctor's interpersonal skills. Westaway *et al.* (2003) view that patients consider interpersonal interaction to be of critical importance including medical personnel being able to listen to, encourage, assist and support patients, and treating them in considerate and friendly ways as well as stressing the importance of the facilities and equipment in hospitals such as the toilets in waiting areas, general cleanliness, and seats in lounges.

Shoshanna *et al.* (2005) reported that patients emphasized communication with medical personnel and, specifically, the medical staff being able to react to their demands, as well as the cleanliness of wards and bathrooms in hospitals. Risser (1975) has reported four components of patient satisfaction namely cost, convenience, the provider's personal qualities and nature of interpersonal relationship, and the provider's professional competence. Ware *et al.* (1983) have identified eight dimensions of patient satisfaction such as interpersonal manner, technical quality of care, accessibility/convenience, finance factors, efficacy/outcome of care, continuity of care, physical environment and availability. Marrakchi *et al.* (2008) proposed that factors such as reception, care, information, comfort, food and invoice service represent patient satisfaction as these factors explain 73.78 percent variance in a questionnaire survey analyzed using factor analysis. Wang (2012) proposed a research model capturing elements of perceived benefits and sacrifice that, by affecting the perceived value of medical tourism products, influence the buying intentions of potential customers. The results indicated that perceived value was a key predictor of customer intentions. As for benefits, perceived medical quality, service quality and enjoyment were critical components that significantly influenced the perception of value. George *et al.* (2010) proposed a systemic view of medical tourism with primary focus on the antecedents of customer satisfaction levels that ultimately lead to stronger strategic and operational marketing programs for practitioners. Panisa *et al.* (2010) explored the antecedents of tourists' attitudinal loyalty toward medical tourism in Pattaya. They used multiple regression analysis and found that attitudinal loyalty toward medical tourism was mainly driven by satisfaction, trust, perceived value, destination familiarity, as well as destination image. Guiry and Vequist (2011) conducted the first study that used SERVQUAL to assess USA medical tourists' expectations and perceptions of the service quality of healthcare facilities located outside of their home country. Rad *et al.* (2010) studied the influence of healthcare service quality on the satisfaction of medical tourists coming to Malaysia as international patients. The authors evaluated the MTSQ using SERVQUAL method and the findings revealed a positive relationship between healthcare service quality and overall patient satisfaction. However, the tangibility dimension was not found to be significant in MTSQ. Lertwannawit and Gulid (2011) assessed the relationship between service quality, value, satisfaction, and brand trust on the behavioral loyalty of international tourists acting as medical tourists toward private hospital medical services in the Bangkok Metropolitan area. The result indicated that service quality has an indirect effect on behavioral loyalty. Yu and Ko (2012) performed a cross-cultural study of perceptions of medical tourism among Chinese, Japanese and Korean medical tourists. They found that significant differences exist in how Chinese, Japanese and Korean medical tourists view factors of choice, discomfort and preferred product items. Chahal and Kumari (2010) investigated the healthcare service quality in the Indian context to predict important service outcomes. They used SEM to assess the direct effects of physical environment quality (comprising ambient condition, social factor and tangibles), interaction quality (comprising attitude and behavior, expertise and process quality) on service quality through outcome quality (comprising waiting time, patient satisfaction and loyalty) being measured. It is interesting to note that adequate research has been carried out on patient perceptions of quality in the Indian context. Most of the studies have been confined to the family planning field (Population Council, 1999). The applicability of the proposed instruments developed elsewhere may not applicable to the Indian context due to cultural differences (Haddad *et al.*, 1998). There is a conspicuous scarcity in the literature about

MTSQ, at least in the Indian context. In view of this, it is important to understand, analyze, and infer the medical tourist's perceptions of the overall healthcare facilities provided to them in availing medical tourism services. It is imperative to review key healthcare as well as medical tourism perceived service quality factors that determine the medical tourist's satisfaction.

Previous studies have revealed that perceived healthcare quality significantly affects patient behaviors such as loyalty and word of mouth (Andaleeb, 2001). Loyalty in the literature has been defined as a degree of continuity in patronage (Meidan, 1996), customers' disposition in terms of preferences and intentions (Blomer and Casper, 1995) and a psychological process resulting in brand commitment (Bloemer et al., 1998). Service loyalty is peculiar and is more dependent on the development of interpersonal relationships (Macintosh and Lockshin, 1998) that focus on personal encounters (Czepiel and Gilmore, 1987; Surprenant and Solomon, 1987; Crosby et al., 1990; Czepiel, 1990) and has greater perceived risk compared to product loyalty (Zeithaml, 1981; Klemperer, 1987; Guiltinan, 1989). Indeed, it has been demonstrated that loyalty is more prevalent among service customers than customers of tangible products (Snyder, 1986).

Taylor and Baker (1994) tested the relationship between service quality and loyalty and found that moderate influence is supported in the communication, transportation and recreation industries. High service quality is viewed as being linked to favorable behavioral intentions (Olorunniwo and Hsu, 2006). The cognitive evaluation of the different service quality dimensions lead to a favorable behavioral response from the customer (Brady et al., 2002; Carrillat et al., 2009). An extensive literature review identified the relationship between service quality and service loyalty in various service industries (Noordhoff et al., 2004; Tat et al., 2011; Parasuraman et al., 2005). Ganguli and Roy (2011) conducted a study on service quality in banking and identified a generic technology-based service quality dimension using exploratory factor analysis (EFA). They used AMOS 16.0 version to conduct confirmatory factor analysis (CFA) to verify the reliability and validity of the service quality and service loyalty construct. Moreover, the hypotheses were tested using SEM using AMOS 16.0. Rad et al. (2010) investigated the influence of healthcare service quality on loyalty in the medical tourism context in Malaysia. They used CFA and SEM to establish the relationship between service quality and loyalty. The study findings revealed a positive relationship between healthcare service quality and overall loyalty.

3. Methodology and data collection

The questionnaire survey used in this study contains 52 items of service quality and 13 items of service loyalty. The survey items were developed for all constructs based on past literature and reviewed by experts in the field of healthcare service quality management. Expert opinion indicated that the scales had adequate content validity. Based on comments from the experts, modifications have been made on the items to better fit medical tourism in the Indian context. This research uses probability as well as non-probability sampling for selecting the healthcare units and respondents. In probability sampling, stratified random sampling is used whereas convenience and judgmental sampling is used for non-probability sampling. In non-probability convenience sampling, the study units (the medical tourists and tourist's companions) that happen to be available at the time of data collection are selected for the purpose of convenience. Non-probability judgmental sampling considers different elements of survey design while deciding upon the study units. Respondents are requested to respond by indicating their level of perception for each item on a five-point Likert-type scale

(1 – strongly disagree and 5 – strongly agree). The responses were collected from medical tourists across India through face-to-face interviews. The perceptions of the medical tourists toward each item is captured in a similar fashion, as service quality is measured using performance only (SERVPERF) proposed by Cronin and Taylor (1992) due to its superiority as demonstrated by Brady *et al.* (2002). The survey is conducted through different modes of collecting responses over a period of six months (March 2010-August 2010). The survey is conducted at seven different Indian hospitals providing healthcare services to medical tourists. Out of the seven hospitals, four hospitals have JCI accreditation and remaining three hospitals do not have international accreditation, but provide healthcare services to medical tourists. Four accredited hospitals are randomly selected out of the ten accredited hospitals in India. A total number of 596 responses are collected from seven hospitals. Out of 596 responses, 382 responses were from JCI-accredited hospitals and the remaining 214 were from non-accredited medical tourism service providers. Medical tourists, who were seriously ill, admitted to an intensive care unit could not provide reliable information and these responses were excluded. Responses were screened based on completeness, rational scoring and adherence to scale and, finally, 534 responses resulting in an 89.6 percent response rate were considered for further analysis. The sample was further split into two sub-samples: sample 1 ($n = 289$) and sample 2 ($n = 245$). This was done by randomly selecting about 50 percent of the cases using the filtering algorithm in SPSS. The items for MTSQ and MTSL are shown in Tables I and II, respectively.

3.1 SEM

SEM is a powerful multivariate analysis technique that is widely used in the social sciences (Gonzalez *et al.*, 2008; Hershberger, 2003). The method combines path analysis (Wright, 1921) and factor analysis (Spearman, 1904). Later, the method is generalized incorporating CFA based on simultaneous equation methods (Jöreskog, 1973; Goldberger, 1972; Wiley, 1973; Jöreskog and Sörbom, 1976). The interest in SEM is often in the development of theoretical constructs, which are represented by the unobserved (latent) variables. Latent variables are hypothetical or unmeasured variables which are free from random or systematic measurement errors and are observed only indirectly or imperfectly through their effects on observed or manifest variables (Bollen, 1989). A key feature of SEM is its ability to test hypotheses about relationships among observed (measured) and latent variables (Hoyle, 1995). Its applications range from the analysis of simple relationships between variables to complex analyses of measurement equivalence for first and higher-order constructs (Cheung, 2008). It provides a flexible framework for developing and analyzing complex relationships among multiple variables that allow researchers to test the validity of a theory using empirical models (Kline, 1998). In SEM, both the observed indicators and the errors associated with the measurement of the indicators are identified in constructing latent variables. The analysis also focusses on the fit of the data to the theoretical model (Schumacker and Lomax, 1996). SEM is a highly flexible and comprehensive methodology that allows researchers to test hypotheses based on multiple constructs that may be directly or indirectly related to both linear and nonlinear models (Cudeck *et al.*, 2009). A distinct advantage of SEM over conventional multiple regression analyses is that the former has greater statistical power (probability of rejecting a false null hypothesis) than does the latter. SEM examines the correlated measurement error so as to determine to what degree unknown factors influence

Construct	Measurement items	Source
MTSQ	Web site provides adequate information on illness treatment	Suggested by experts
	Online pre-consultation of doctors	Suggested by experts
	Fast and errorless online registration facility	Lawthers *et al.* (1999)
	The 24×7 contact center and toll-free help lines always willing to help	Suggested by experts
	Medical treatment location has excellent connectivity by air/railways	Das *et al.* (2007)
	Adequate transportation facilities by the medical care unit	Chaudhary (2000), Yen *et al.* (2008)
	Guaranteed reservation by the medical care unit	Alen *et al.* (2006)
	Hospital provides sufficient assistance in obtaining the medical visa	Expert opinion
	High level of transparency by the employees of the hospital	Mclver (1991), Abramowitz *et al.* (1987)
	High level of safety while availing the hospital facilities	Mclver (1991), Abramowitz *et al.* (1987)
	Employees of hospital protects from crime and terrorist-related problems	Dotson *et al.* (2008)
	Good tie-up of the hospital with insurance companies	Self-developed
	Accreditation of medical care unit is globally accepted	Mattoo and Rathindran (2006), Donahue and Van-Ostenberg (2000), Van Niekerk *et al.* (2003)
	State-of-the-art diagnostic center	Duong *et al.* (2004)
	Payment facility is easy and flexible	Haddad *et al.* (1998)
	Healthy, neat and clean environment	Alen *et al.* (2006), Rao *et al.* (2006), Ruiqi and Adrian (2009), Hansen *et al.* (2008)
	Hospital provides sufficient employees for treatment	Duong *et al.* (2004)
	Employees in hospital regularly monitor and assure recovery	Expert-opinion
	Highly qualified and globally trained doctors	Tung and Chang (2009)
	Significant cost saving on the medical treatment	Riser (1975), Hansen *et al.* (2008)
	Good value for money against the medical tourism travel	Haddad *et al.* (1998)
	Routine visit of doctors and staffs	Haddad *et al.* (1998)
	Employees of the hospital are consistently courteous and respectful	Fowdar (2008), Hansen *et al.* (2008), Duong *et al.* (2004)
	The behavior of hospital employees build emotional and psychological confidence	Fowdar (2008)
	Fast response to the questions and worries by the hospital's employees	Andaleeb (2008)
	Employees of the hospital are trustworthy	Fowdar (2008), Hansen *et al.* (2008)
	Employees of hospital provide undivided attention	Rao *et al.* (2006)
	Foreign exchange facilities are provided within the premises	Narayan *et al.* (2008)
	24×7 internet connectivity inside the premises	Narayan *et al.* (2008)

Table I.
Survey items
for MTSQ

Construct	Measurement items	Source
	24×7 STD/ISD connectivity inside the premises	Narayan *et al.* (2008)
	Quality and variety of food with multi-cuisine dining hall	Alen *et al.* (2006), Das *et al.* (2007)
	Hospital offers alternative therapy	Self-developed
	Spiritualism/meditation program is also provided with general treatment	Self-developed
	The prescribed medicines are available inside the premises	Ramsaran-Fowdar (2008), Rao *et al.* (2006)
	Round-the-clock pharmaceutical service	Rao *et al.* (2006)
	Adequate information/travel desk counters to cater to specific needs	Rao *et al.* (2006)
	Hospital's information and advertisement about the country's cultural heritage is adequate	Yen *et al.* (2008), Narayan *et al.* (2008), Chaudhary (2000), Tribe and Snaith (1998)
	Hospital keeps treatment records confidential	Ramsaran-Fowdar (2008)
	The attitude of local people is excellent	Das *et al.* (2007), Narayan *et al.* (2008)
	Excellent recreational service during the period of therapy	Narayan *et al.* (2008)
	Good tie-up with external travel agencies	Das *et al.* (2007)
	Waiting time for medication is short	Hansen *et al.* (2008), Lawthers *et al.* (1999)
	Waiting time for the doctors' examination is short	Boos *et al.* (2001)
	Short-time stay in hospital	Rao *et al.* (2006)
	Faster in admission and discharge procedures	Weingart *et al.* (2005), Grimmer and Moss (2001)
	Sufficient healthcare infrastructure	Das *et al.* (2007), Narayan *et al.* (2008), Yen *et al.* (2008)
	Employees in hospital clearly communicate about the diagnosed illness and treatment	Andaleeb (2008)
	Hospital keeps its promises it makes	Ruiqi and Adrian (2009)
	Purpose of medical tourism travel is fulfilled	Self-developed
	Communicate positive things about the hospital to other people	Brown and Swatz (1989), Parasuraman *et al.* (1988), Crosby and Stephens (1987)
	Recommend the hospital to friends, relatives and people who seek advice	Aydin and Ozer (2005), Collier and Bienstock (2006)
	Willingness to visit the hospital for further/follow-up treatments	Suggested by experts

Table I.

shared error among variables that may affect the estimated parameters of the method (Rifkin, 1995). SEM also has the ability to manage measurement error, which is one of the greatest limitations of most studies. SEM provides no straightforward significance tests to determine model fit. Instead, it evaluates model fit by examining multiple tests (e.g. χ^2, CMIN/DF (degree of freedom), comparative fit index (CFI), Bentler-Bonett nonnormed fit index (NNFI), root mean squared error of approximation (RMSEA)). SEM resolves problems of multicollinearity. Finally SEM depicts a diagram or a pictorial representation of a model that is transformed into a set of equations. The set of equations are solved simultaneously to test model fit and estimate parameters. The graphical language provides a convenient and powerful way to present complex relationships. SEM is widely used in service sectors like multichannel E-Services

Construct	Measurement items	Source
MTSL	Transact with this medical tourism service provider again for future needs	Jacoby and Chestnut (1978)
	Try new services that are provided by this medical tourism service provider	Sudhahar et al. (2006)
	Say positive things to other people about the services provided at this medical tourism service provider	De Ruyter et al. (1998)
	Continue to patronize this medical tourism service provider even if the service charges are increased moderately	Rundle-Thiele and Mackay (2001)
	Have strong preference to this medical tourism service provider	Sudhahar et al. (2006)
	Keep patronizing this medical tourism service provider regardless of everything being changed somewhat	Sudhahar et al. (2006)
	Likely to pay a little bit more for using the services of this medical tourism service provider	Rundle-Thiele and Mackay (2001)
	Patronize this medical tourism service provider for a long period of time	Sudhahar et al. (2006)
	Deal exclusively with this medical tourism service provider	Sudhahar et al. (2006)
	Think of this medical tourism service provider as my healthcare services	Sudhahar et al. (2006)
	The medical tourism service provider I patronize reflect a lot about who I am	Sudhahar et al. (2006)
	This medical tourism service provider would rank first among the other medical tourism service provider	Zeithaml et al. (1996), Ostrowski et al. (1993)
	Switch to a competitor if you experience a problem with current medical tourism service provider	Zeithaml et al. (1996), De Ruyter et al. (1998)

Table II.
Survey items
for MTSL

(Sousa and Voss, 2006), restaurant (Donavan and Hocutt, 2001), destination management (Yoon and Uysal, 2005), leisure farming (Liu and Yen, 2010), airlines (Chen, 2008), retail banking (Ganguli and Roy, 2011) and electronic data interchange (Lee and Ahn, 2009). SEM is used in supply chain analysis (Kazemzadeh et al., 2011), private health center services (Haque et al., 2012), healthcare service (Lee et al., 2000) and medical tourism (Rad et al., 2010).

4. Data analysis, results and discussions

Among 534 respondents, 354 (66.4 percent) are male and 180 (33.6 percent) are female. The average age was 43.5 years with the range between 20 and 72 years. In all, 59.2 percent of the medical tourists are employed in service, 28.7 percent are self-employed and 12.1 percent are found to be housewives. Out of the 534 medical tourists interviewed, 229 of the total (42.9 percent) are from the United Arab Emirates, 76 (14.2 percent) are from European countries, 91 (17 percent) are from the USA and Canada, 68 (12.8 percent) are from South Asian Association for Regional Cooperation countries, 51 (9.7 percent) are from African countries and 19 (3.5 percent) are from Australia. Totally, 115 (21.5 percent) of the medical tourists have an income level of < USD 10,000, 125 (23.5 percent) have an income level between USD 10,000 and 20,000, 216 (40.5 percent) have between USD 20,000 and 30,000, 50 (9.3 percent) have between USD 30,000 and 50,000 and 28 (5.2 percent) patients have income level of more than USD 50,000 per annum. Out of the 534 respondents, 364 (68.2 percent) are married, 98 (18.3 percent) are single and the remaining 72 (13.5 percent) are divorced. The medical tourists are

admitted to various inpatient departments of the selected hospitals for treatment of various ailments like Gastroenterology (22.1 percent), ENT (11.1 percent), Urology (18 percent), Cardiology (12.5 percent), Orthopedics (12.5 percent), Gynecology (9.7 percent), Nephrology (5.5 percent), General Surgery (5.9 percent) and Ophthalmology (2.8 percent) is shown in Table III.

Figure 1 illustrates and verifies that differences exist in the average perception of loaded items between accredited medical tourism service providers and non-accredited providers. It is found that the average perception varies widely on the basis of JCI accreditation, a global accreditation for medical tourists. The figure exposes that the mean score for the accredited medical tourism service providers is more than for the non-accredited medical tourism service providers for almost all of the items. The maximum difference is observed for item 13 (global accreditation of medical care unit) and item 23 (employees of the hospital are consistently courteous and respectful). In this context, the Indian Ministry of Health had already recommended accreditation of healthcare facilities in India. However, the Government of India, along with the Health Ministry, should aggressively implement healthcare quality and safety as per the Quality Manuals and promote the accredited healthcare infrastructures worldwide. The accredited healthcare service firms in India should also look for opportunities to collaborating with international healthcare institutions. However, the mean score for non-accredited hospitals is more than for the accredited hospitals in two items: item 21 (good value for money against the medical tourism travel) and item 34 (the prescribed medicines are available inside the premises).

Hence the Indian Ministry of Health should investigate, analyze and recommend the standardization of treatment cost factors. The Indian pharmaceutical sector must ensure an effective physical distribution system so that the international patients can avail themselves of the prescribed medicine inside healthcare premises. Interestingly, the mean score is same for both accredited service providers and non-accredited service providers for item 52 (willingness to visit the hospital for further/follow up treatments). This indicates that medical tourists to India are satisfied overall with the healthcare services rendered.

Both EFA and CFA were used to assess the reliability and validity of the instrument. Data analysis proceeds in three steps. EFA was first used to assess the validity of each latent variable. These variables include the dimensions of MTSQ: accessibility/convenience, treatment satisfaction, courtesy, physical environment features, technical quality of care competency, promptness, facility premises, alternative therapy, finance factors for medical services and pharmaceutical services. Other latent variables include dimensions of MTSL: Behavioral Loyalty, Attitudinal Loyalty and Cognitive Loyalty. The EFA is used to identify

Type of treatment	Percentage
Gastroenterology	22.10
ENT	11.10
Urology	18.00
Cardiology	12.50
Orthopedics	12.50
Gynecology	9.70
Nephrology	5.50
General surgery	5.90
Ophthalmology	2.80

Table III.
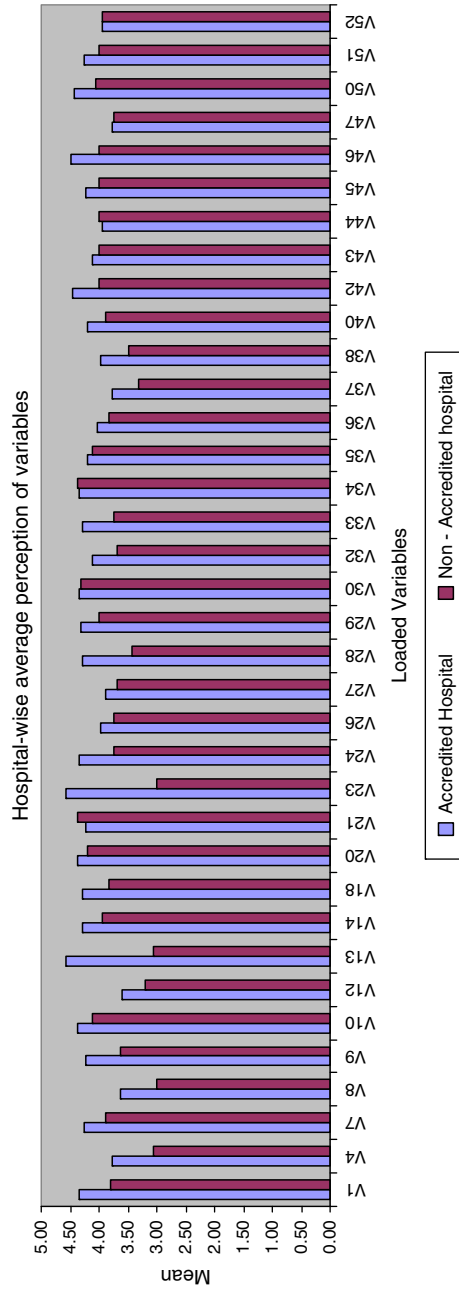Type of treatment

30

Figure 1.
Average perception
of items based on
accreditation

the underlying dimensions of MTSQ and MTSL for medical tourism in India. Next, CFA was used to confirm the factor structure of the constructs and validate the EFA results. SEM is employed to examine the hypothesized relationships.

4.1 EFA
Given the validity of individual latent variables, two EFAs were conducted. The EFA was performed on the 52 items of the MTSQ and the other one included the 13 items of the medical tourist's loyalty measurement scale. EFA was performed on sample 1 using SPSS version 19.0. The criteria used for factor extraction is based on the eigenvalue (should be greater than one) but more importantly the factor structure should be meaningful, useful and conceptually sound (Pett *et al.*, 2003). The result of principal axis factoring analysis with varimax rotation for MTSQ is presented in Table IV. In the initial application, the number of items is reduced from 52 to 36. In the second application, these 36 items are classified under ten factors: accessibility/convenience, treatment satisfaction, courtesy, physical environment features, technical quality of care competency, promptness, facility premises, alternative therapy, finance factors for medical services and pharmaceutical services. All main loadings are higher than 0.60 and cross-loadings are < 0.40, which indicates the validity of the measurement instruments. In all, 16 items measuring service quality were removed because of their low loadings to any factor.

The average variance explained is 73.93 percent, higher than 60 percent, which also indicates the validity of the measurement instruments (Johnson and Wichern, 2002; Kaiser, 1974). Eigenvalues range from 2.456 to 6.090. The reliability of the measurement instrument was assessed using Cronbach's α value. A Cronbach's α-value of $\geqslant 0.7$ is considered acceptable for the factor to be reliable (Hair *et al.*, 2006). The value of α for all dimensions is 0.909, which is acceptable. This indicates the reliability of the measurement instruments for MTSQ. The MTSQ construct is shown in Figure 2.

The same analysis was conducted for the latent variables of the medical tourist's loyalty. All items measuring the medical tourist's loyalty were loaded into three factors as shown in Table V. The items MTL1, MTL2, MTL3, MTL4, MTL5 and MTL6 measure Behavioral Loyalty. MTL7, MTL8, MTL9, MTL10 and MTL11 measure attitudinal loyalty. The items MTL12 and MTL13 measure Cognitive Loyalty. The average variance explained is 76.34 percent, much higher than 60 percent. The eigenvalues are higher than 1.0, ranging from 1.041 to 7.404. The value of Cronbach's α for all dimensions is 0.918. Cronbach's α values for behavioral loyalty, attitudinal loyalty and cognitive loyalty are 0.933, 0.924 and 0.826, respectively, higher than the cut-off value of 0.80. This result provides sufficient evidence of the reliability and the validity of the measurement instruments for MTSL.

4.2 CFA
After identifying ten factors and three factors of MTSQ and MTSL, respectively, through EFA, the next stage is to confirm the factor structure using sample 2. This is applied to provide a more rigorous procedure for testing unidimensionality (Anderson and Gerbing, 1988). SEM using AMOS 18.0 was used to perform the CFA. Initially, CFA was run for the MTSQ construct. The model (Model 1) consisted of 36 observed variables with ten latent variables is shown in Figure 3. In all, 11 multivariate outliers (with Mahalanobis distance statistics $p < 0.001$) were identified and excluded from the analysis. The Cronbach's α value for alternative therapy and pharmaceutical services

Table IV.
EFA of MTSQ

Factors	Measurement items	Factor loading	Cronbach's α	Cumulative % of variance
Accessibility/ convenience	AC1: web site provides adequate information	0.795	0.89	13.78
	AC2: the 24/7 contact center	0.843		
	AC3: medical visa assistance	0.629		
	AC4: high level of transparency	0.748		
	AC5: excellent recreational service	0.715		
Treatment satisfaction	TS1: transparency in communication	0.693	0.95	26.181
	TS2: communicate positive things	0.754		
	TS3: recommend	0.809		
	TS4: follow up treatments	0.801		
Courtesy	C5: consistently courteous and respectful	0.741	0.86	35.397
	C6: emotional and psychological confidence	0.744		
	C7: trustworthy	0.673		
	C8: provide undivided attention	0.606		
Physical environment features	PE1: Guaranteed reservation	0.808	0.88	44.898
	PE2: adequate information/travel desk	0.683		
	PE3: adequate information on cultural heritage	0.684		
	PE4: confidential treatment records	0.771		
	PE5: safety and security	0.708		
Technical quality of care competency	TQC1: tie-up with insurance companies	0.688	0.91	52.196
	TQC2: global accreditation	0.729		
	TQC3: state of art diagnostic center	0.671		
	TQC4: healthcare infrastructure	0.645		
	TQC5: highly qualified doctors	0.61		
Promptness	PMT1: waiting time	0.737	0.83	57.201
	PMT2: short time stay in hospital	0.788		
	PMT3: faster in admission and discharge procedures	0.671		
	PMT4: routine visit of doctors and staffs	0.736		

| Factors	Measurement items	Factor loading	Cronbach's α	Cumulative % of variance
Facility Premises	PR1: Foreign exchange facilities	0.824	0.81	62.519
	PR2: 24×7 internet connectivity	0.755		
	PR3: 24×7 STD/ISD connectivity	0.771		
Alternative Therapy	AT1: hospital offers alternative therapy	0.772	0.71	67.099
	AT2: spiritualism/meditation program	0.844		
Finance factors for medical services	FF1: significant cost saving	0.881	0.86	70.591
	FF2: Good value for money	0.686		
Pharmaceutical services	PS1: availability of prescribed medicines	0.614	0.73	73.935
	PS2: round the clock pharmaceutical service	0.664		

Table IV.
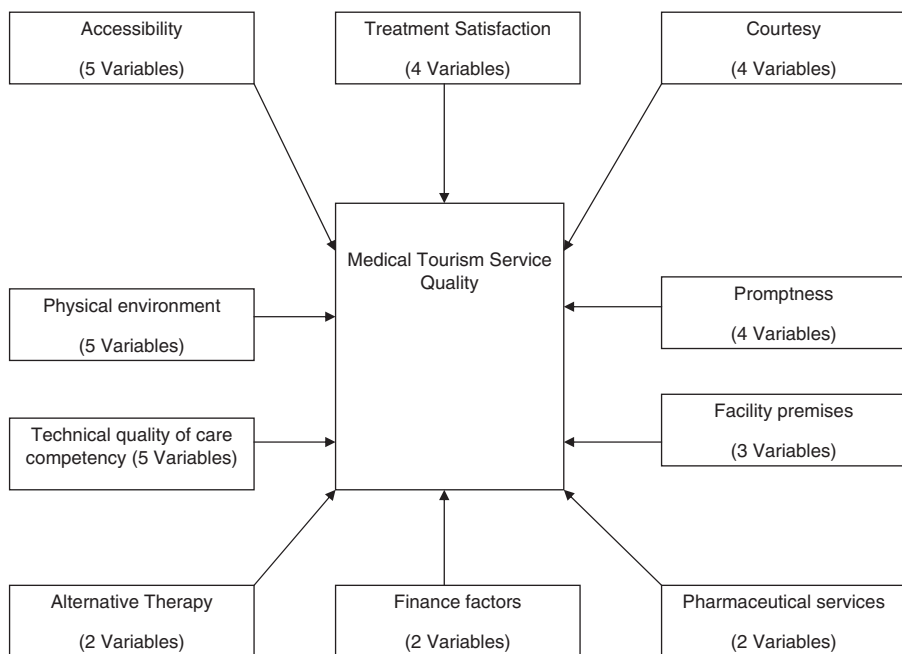
Figure 2.
Medical tourism
service quality
(MTSQ) model
in India

are found just above the cut-off score of 0.7 (Hair *et al.*, 2006). The results of the CFA analysis indicated a bad fit between the model and the data ($\chi^2 = 1430.379$, df = 406, $p < 0.001$; χ^2/df = 3.523 (> 3); CFI = 0.839; Tucker-Lewis index (TLI) = 0.816; IFI = 0.840; normed fit index (NFI) = 0.790; Parsimony normed fit index (PNFI) = 0.690; Parsimony comparative fit index (PCFI) = 0.733 and RMSEA = 0.093). The traditional χ^2 statistic for this measurement model is 1,430.379, which does not support an acceptable match between the theory implied covariance matrix and the sample data covariance matrix. The significant χ^2 statistic does not definitively mean a poor model fit because the χ^2 statistics tend to be large with large samples (Joreskog, 1993). χ^2/df is therefore applied in this study to adjust the sensitivity of χ^2 to sample size. The χ^2/degree of freedom value for this measurement model is more than the cut-off value of 3.0 (Simon and Paper, 2007). In short, the measurement model does not confirm to the ten-factor structure of the MTSQ instrument.

Therefore, alternative therapy and pharmaceutical services are excluded from the model 1. Moreover, the AMOS output for standardized residual covariance identified large residual values between PMT4 and TQC5 (4.530), AC4 and TS1 (5.122), and AC5 and TQC1 (3.868). Removing large residual items from the existing model suggests obtaining an improved model. Model 2 was estimated accordingly and is shown in Figure 4. The eight factors were hypothesized to be correlated. In this model, there was no correlation among the measurement error variables. The results from the CFA showed a better model fit ($\chi^2 = 560.374$, df = 268, $p < 0.001$; χ^2/df = 2.091 (< 3); CFI = 0.954; TLI = 0.944; IFI = 0.955; NFI = 0.916; PNFI = 0.756; PCFI = 0.787 and RMSEA = 0.068). In addition, all the indicators loaded significantly on the latent constructs. The values of the fit indices indicate a reasonable fit of the measurement model with data (Byrne, 2001). Another absolute fit index, the standardized root mean

Factors	Measurement items	Factor loading	Cronbach's α	Cumulative % of variance
Behavioral Loyalty (BHL1)	MTL1: transact with this medical tourism service provider again for future needs	0.862	0.933	35.327
	MTL2: try new services that are provided by this medical tourism service provider	0.812		
	MTL3: recommend other people to patronize to this medical tourism service provider	0.792		
	MTL4: say positive things to other people about the services provided at this medical tourism service provider	0.755		
	MTL5: continue to patronize this medical tourism service provider even if the service charges are increased moderately	0.783		
	MTL6: have strong preference to this medical tourism service provider	0.767		
Attitudinal Loyalty (BHL2)	MTL7: keep patronizing this medical tourism service provider regardless of everything being changed somewhat	0.804	0.924	67.444
	MTL8: likely to pay a little bit more for using the services of this medical tourism service provider	0.846		
	MTL9: patronize this medical tourism service provider for a long period of time	0.869		
	MTL10: deal exclusively with this medical tourism service provider	0.798		
	MTL11: think of this medical tourism service provider as my healthcare services	0.772		
Cognitive Loyalty (BHL3)	MTL12: the medical tourism service provider I patronize reflect a lot about who I am	0.787	0.824	76.337
	MTL13: this medical tourism service provider would rank first among the other medical tourism service provider	0.903		

Table V.
EFA of MTSL

square residual (SRMR) is also examined and its value of 0.022 is lower than the cut-off value of 0.05 (Chin and Todd, 1995; Segars and Grover, 1993). The goodness of fit index (GFI) is 0.85 for this measurement model, higher than the cut-off value of 0.80; adjusted goodness of fit index (AGFI) is 0.803, higher than the desirable value of 0.80 (Gefen *et al.*, 2000). All their values are higher than the benchmark of 0.90 for NFI and CFI (Anderson and Gerbing 1988; Mulaik *et al.*, 1989) and 0.75 for PNFI (Sivo *et al.*, 2006). Therefore, these fit indices indicate the acceptability of the measurement model.

The measurement model 2 confirms to the eight-factor structure of the MTSQ instrument. A second order CFA was conducted to test the relationships between MTSQ and its potential dimensions. The measurement model revealed an adequate model fit with the data ($\chi^2 = 732.479$, df $= 290$, $p < 0.001$; χ^2/df $= 2.526$ (< 3); GFI $= 0.908$; SRMR $= 0.032$; CFI $= 0.931$; TLI $= 0.922$; IFI $= 0.931$; NFI $= 0.901$; PNFI $= 0.795$; PCFI $= 0.830$ and RMSEA $= 0.08$). The path coefficients between MTSQ and its eight dimensions range from 0.735 to 0.934 (Table VI), all significant at 0.01 levels. All eight dimensions were significant and positively related to the latent variable MTSQ. The previously selected fit indices support the contention that this
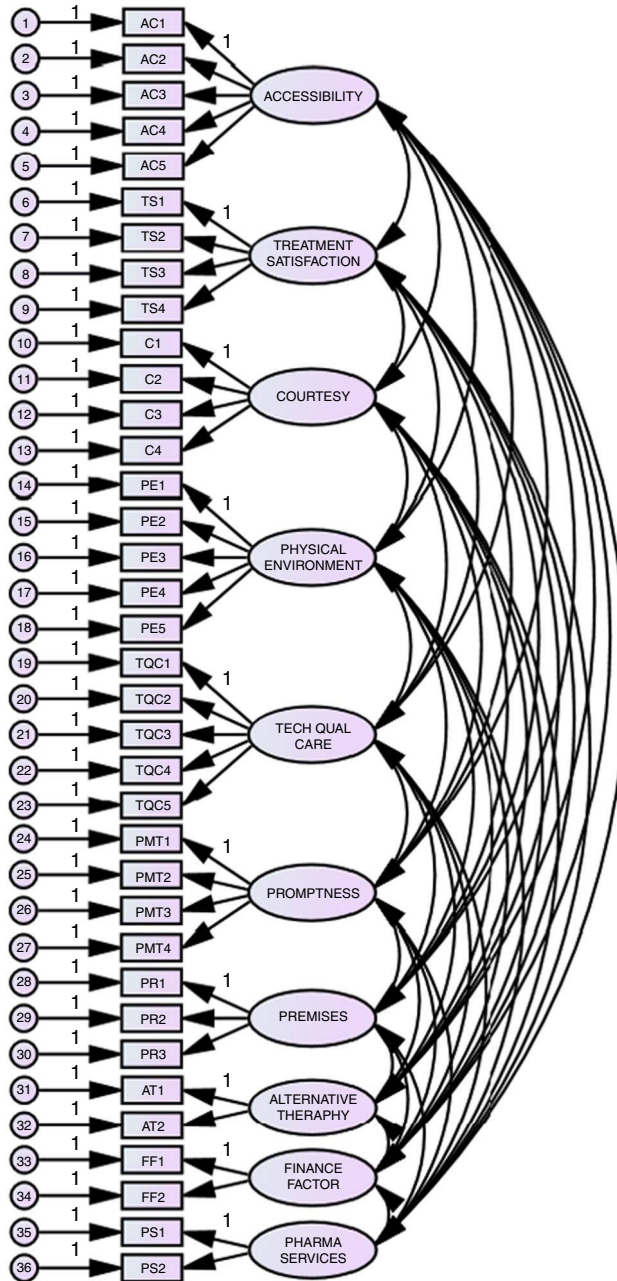
Figure 3.
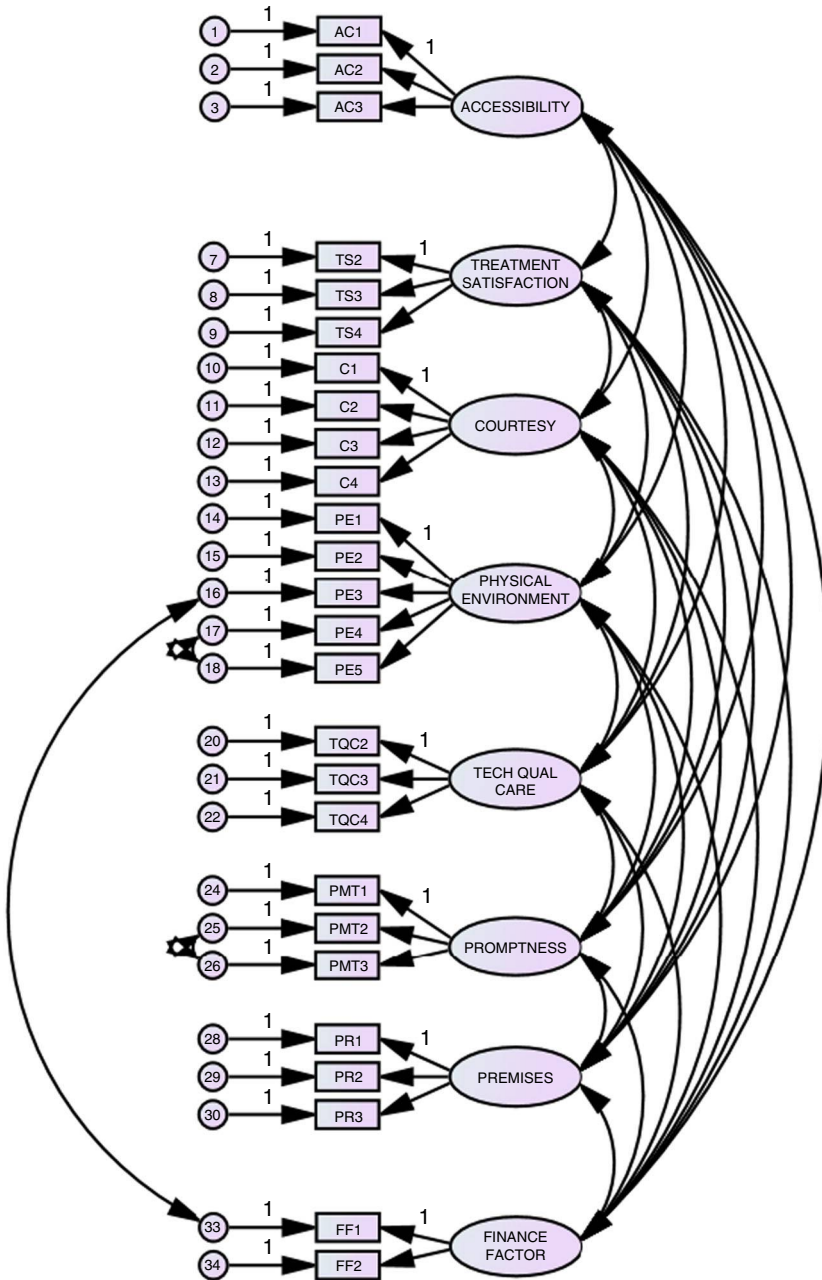Model 1 –
measurement
model for MTSQ

Figure 4.
Model 2 – final
measurement model
for MTSQ

second order measurement model of MTSQ is acceptable. It is also observed that all standardized factor loadings are > 0.4 and significant at $\alpha = 0.05$. The reliabilities of the individual dimensions ranged from 0.88 to 0.95 which exceeds the recommended level of 0.7. The Cronbach's α for the service quality instrument was 0.93 which is acceptable and shows that the instrument is reliable.

Further evidence of the reliability of the scale is provided in Table VII, which shows the Cronbach's α, composite reliability (CR) and average variance extracted (AVE) scores of the different factors obtained. CR of all the latent variables is greater than the acceptable limit of 0.70 (Carmines and Zeller, 1988). The average-variance extracted for all the factors is $\geqslant 0.5$ which is acceptable (Fornell and Larcker, 1981).

Construct validity is the extent to which a set of measured variables actually reflects the latent construct which they are designed to measure (Hair *et al.*, 2006). Construct validity is established by face validity, convergent validity and discriminant validity. Face validity was established by adopting the measurement items used in the study from the existing literature and adapting the same to the present research context.

Path			Standardized loading
FINANCE_FACTOR	←	MTS Quality	0.851
PROMPTNESS	←	MTS Quality	0.878
ACCESSIBILITY	←	MTS Quality	0.735
TREATMENT_SATISFACTION	←	MTS Quality	0.761
COURTESY	←	MTS Quality	0.888
PHYSICAL_ENVIRONMENT	←	MTS Quality	0.934
TECH QUAL_CARE	←	MTS Quality	0.801
PREMISES	←	MTS Quality	0.871
AC3	←	ACCESSIBILITY	0.762
AC2	←	ACCESSIBILITY	0.874
AC1	←	ACCESSIBILITY	0.880
TS4	←	TREATMENT_SATISFACTION	0.851
TS3	←	TREATMENT_SATISFACTION	0.906
TS2	←	TREATMENT_SATISFACTION	0.813
PR3	←	PREMISES	0.904
PR2	←	PREMISES	0.904
PR1	←	PREMISES	0.848
C4	←	COURTESY	0.804
C3	←	COURTESY	0.952
C2	←	COURTESY	0.913
C1	←	COURTESY	0.816
PE5	←	PHYSICAL_ENVIRONMENT	0.715
PE4	←	PHYSICAL_ENVIRONMENT	0.673
PE3	←	PHYSICAL_ENVIRONMENT	0.863
PE2	←	PHYSICAL_ENVIRONMENT	0.867
PE1	←	PHYSICAL_ENVIRONMENT	0.811
TQC4	←	TECH QUAL_CARE	0.919
TQC3	←	TECH QUAL_CARE	0.969
TQC2	←	TECH QUAL_CARE	0.908
PMT3	←	PROMPTNESS	0.968
PMT2	←	PROMPTNESS	0.914
PMT1	←	PROMPTNESS	0.870
FF2	←	FINANCE_FACTOR	0.912
FF1	←	FINANCE_FACTOR	0.939

Table VI.
Standardized loading for measurement model MTSQ

Construct	Measurement items	Standardized estimates	Cronbach's α	p-value	AVE	CR
Accessibility/convenience	AC1	0.880	0.876	*	0.76	0.93
	AC2	0.874		*		
	AC3	0.762		*		
Treatment Satisfaction	TS2	0.813	0.888	*	0.71	0.79
	TS3	0.851		*		
	TS4	0.906		*		
Courtesy	C1	0.816	0.924	*	0.73	0.89
	C2	0.913		*		
	C3	0.952		*		
	C4	0.804		*		
Physical environment features	PE1	0.811	0.900	*	0.57	0.86
	PE2	0.867		*		
	PE3	0.863		*		
	PE4	0.673		*		
	PE5	0.715		*		
Technical quality of care	TQC2	0.908	0.953	*	0.87	0.95
	TQC3	0.969		*		
	TQC4	0.919		*		
Promptness	PMT1	0.870	0.938	*	0.82	0.93
	PMT2	0.914		*		
	PMT3	0.968		*		
Facility premises	PR1	0.848	0.916	*	0.78	0.91
	PR2	0.904		*		
	PR3	0.904		*		
Finance factors for medical services	FF1	0.939	0.923	*	0.86	0.92
	FF2	0.912		*		

Table VII.
Measurement model
MTSQ results

Convergent validity was assessed by examining the factor loadings and the AVE of the constructs as suggested by Fornell and Larcker (1981). All the indicators had significant loadings onto the respective latent constructs ($p < 0.001$) with values varying between 0.673 and 0.969 (Table VII). In addition, the AVE for each construct is $\geqslant 0.50$, which further supports the convergent validity of the constructs. Fornell and Larcker (1981) state that discriminant validity can be assessed by comparing the AVE with the corresponding inter-construct squared correlation estimates. From Table VIII, it can be inferred that the square root of the AVE values of all the MTSQ factors (diagonal values) are greater than the inter-construct correlations which supports the discriminant validity of the constructs. Thus, the measurement model reflects good construct validity and has desirable psychometric properties.

Next, CFA was carried out for the medical tourist's service loyalty items. The χ^2/degree of freedom value for this measurement model is found to be more than the cut-off value of 3.0. The CFA analysis indicated a bad fit between the model and the data ($\chi^2 = 202.240$, df = 49, $p < 0.001$; χ^2/df = 4.127 (>3); CFI = 0.921; TLI = 0.894; IFI = 0.922; NFI = 0.900; PNFI = 0.668; PCFI = 0.684 and RMSEA = 0.116). In short, the measurement model does not confirm to the three-factor structure of the medical service quality instrument. Therefore, items MTL5, MTL7 and MTL8 are excluded from the model due to large residual values. Thus, the final measurement model for medical tourist's service loyalty is estimated. The measurement model indicated an acceptable model fit of the data ($\chi^2 = 64.228$, df = 28, $p < 0.001$; χ^2/df = 2.294 (<3); SRMR = 0.035; CFI = 0.977; TLI = 0.962; IFI = 0.977; NFI = 0.960; PNFI = 0.797; PCFI = 0.808; GFI = 0.947; AGFI = 0.905; and RMSEA = 0.075). The values of the fit indices indicate a reasonable fit of the measurement model with data (Byrne, 2001) and conforms to the three-factor structure of the medical tourist's service loyalty instrument. The path coefficients between MTSL and its three dimensions range from 0.842 to 0.909 (shown in Table IX), all significant at 0.01 levels. All three dimensions were significant and positively related to the latent variable MTSL. The previously selected fit indices support the contention that this measurement model of MTSL is acceptable. It is also observed that all standardized factor loadings are >0.4 and significant at $\alpha = 0.05$. The reliabilities of the individual dimensions ranged from 0.81 to 0.92, which exceeds the recommended level of 0.7. The Cronbach's α for the service quality instrument was 0.912 which is acceptable and shows that the measurement model is reliable.

4.3 Impact of MTSQ dimensions on MTSL
SEM was used to examine the hypothesized relationships. SEM was employed because it is generally considered to be more suitable for mathematical modeling involving complicated variable relationships. SEM allows for analysis of both the measurement model and the structural model. It can not only address measurement errors but also allow for examining the factor analysis and hypothesis testing together (Gefen *et al.*, 2000). The structural model with the MTSQ dimensions and MTSL dimensions (obtained earlier in the study) is shown in Figure 5. The results of the SEM indicate an adequate model fit with the data ($\chi^2 = 1046.131$, df = 574, $p < 0.001$; χ^2/df = 1.823 (<3); SRMR = 0.034; CFI = 0.941; TLI = 0.935; IFI = 0.941; NFI = 0.878; PNFI = 0.8; PCFI = 0.857; GFI = 0.856; AGFI = 0.825; and RMSEA = 0.059 and Akaike information criterion = 1,230.131). Result of hypotheses testing is shown in Table X.

	Courtesy	Accessibility	Treatment satisfaction	Physical environment	Tech. qual. care	Promptness	Premises	Finance factor
Courtesy	0.874							
Accessibility	0.638	0.841						
Treatment satisfaction	0.647	0.740	0.857					
Physical environment	0.706	0.712	0.774	0.790				
Tech qual care	0.711	0.684	0.625	0.727	0.933			
Promptness	0.792	0.575	0.598	0.703	0.713	0.906		
Premises	0.727	0.582	0.644	0.769	0.665	0.802	0.884	
Finance factor	0.730	0.605	0.626	0.732	0.706	0.807	0.796	0.925

Table VIII.
Discriminant validity

	Path		Standardized loading
BHL1	←	MTSL	0.909
BHL2	←	MTSL	0.905
BHL3	←	MTSL	0.842
MTL1	←	BHL1	0.744
MTL2	←	BHL1	0.553
MTL3	←	BHL1	0.585
MTL4	←	BHL1	0.668
MTL6	←	BHL1	0.740
MTL9	←	BHL2	0.797
MTL10	←	BHL2	0.946
MTL11	←	BHL2	0.950
MTL12	←	BHL3	0.885
MTL13	←	BHL3	0.771

Table IX.
Standardized loading
for measurement
model MTSL

5. Conclusions

The current research identifies MTSQ dimensions so that the medical tourism industry can leverage the overall satisfaction of tourists and use it as a weapon for competitive differentiation. The first group of hypotheses is about the dimensions of MTSQ. The dimensions of MTSQ identified are "accessibility/convenience," "treatment satisfaction," "courtesy," "physical environment features," "technical quality of care competency," "promptness," "facility premises," and "finance factors." These dimensions may act as guidelines for healthcare managers and administrators to understand the particular dimensions that medical tourists consider while evaluating the medical tourism service delivery process. This is imperative because medical tourists are concerned with choosing an appropriate medical tourism service provider by evaluating the right destination, healthcare delivery and treatment value. Healthcare managers must have proper knowledge of medical tourists' perceptions of service quality dimensions in the medical tourism industry. The dimensions identified in this study can be employed by service providers to present themselves as lucrative and preferred medical tourism destinations, and to highlight their range of healthcare facilities, infrastructure details, safety aspects, quality control issues and the country's rich heritage in order to enhance the medical tourist's self-assurance. This will relieve India from the problem from which it continues to suffer: an image of poverty and poor hygiene that discourages many patients (Begde, 2008) and reduce medical tourists' perceived risk in availing themselves of medical tourism services, and instill confidence in such services (Shostack, 1977). As globalization and privatization of healthcare has changed the consumption pattern of the medical tourist, it is, therefore, vital for medical tourism service providers to provide effective quality healthcare services and to develop long-term relationships. Service loyalty is the key indicator of the medical tourist's commitment to a medical tourism service provider. Hence, examining the differential impact of MTSQ dimensions on service loyalty in medical tourism is an important issue. This is consistent with the literature on loyalty (Brady *et al.*, 2002; Zeithaml *et al.*, 1996; Russell-Bennett *et al.*, 2007; Uncles *et al.*, 2003; Biong, 1993; De Ruyter *et al.*, 1998; Harris and Goode, 2004).

Among the MTSQ dimensions associated with the Indian context, the first one is labeled as "Accessibility." This construct is concerned with the medical tourists' convenience in obtaining healthcare that includes three items: assistance in obtaining
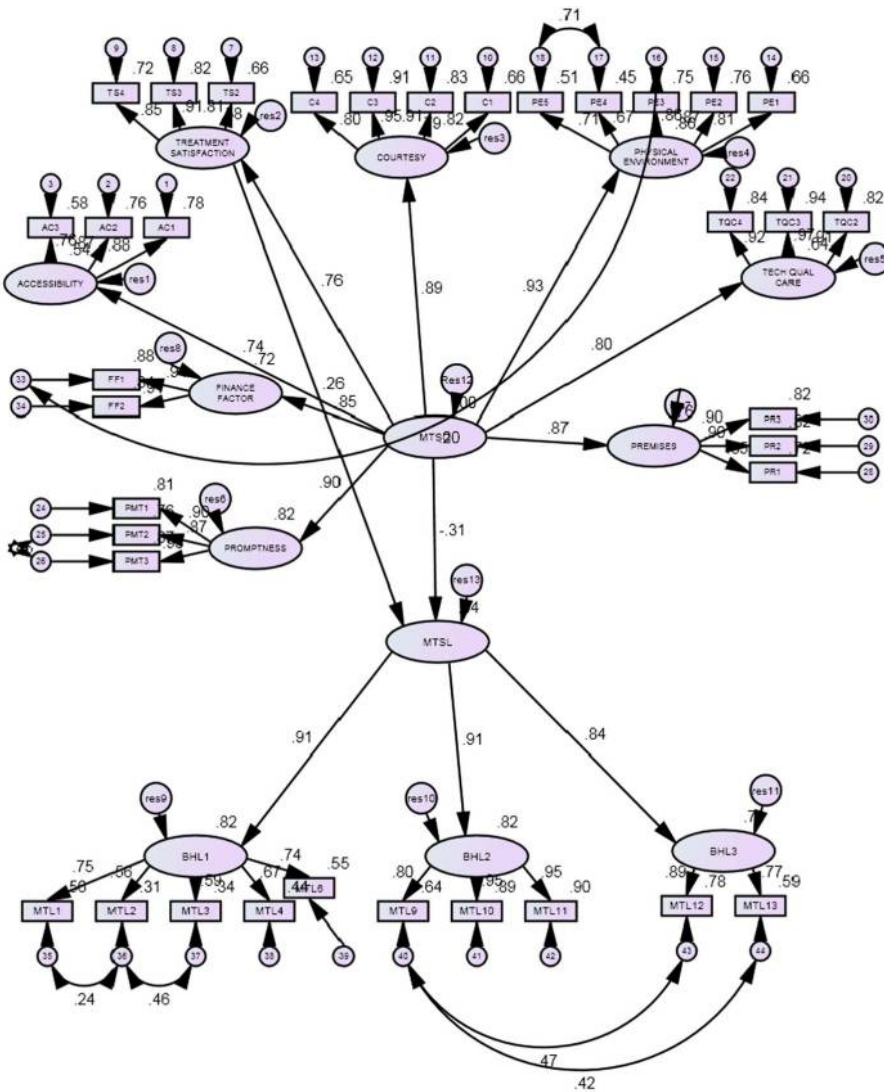
Figure 5.
Structural equation
modeling

a medical visa, adequate information about the service provider and a round-the-clock contact center. All the other items that measure accessibility were removed because of poor reliability, validity and high cross-loading. The medical tourists gather large amounts of information about the service provider by virtual tours of the web sites, contacting the service provider well in advance for an appointment, consulting with the doctors on illness status and obtaining effective information for a medical visa. In medical tourism services, one of the most vital issues is satisfaction with the treatment and satisfaction with the decision to use a particular provider (Choi *et al.*, 2004). Moreover, positive communication about the treatment enhances the credibility of the service provider. These serve to build relationships between the medical tourists

Hypothesis	Standardized path co-efficient	p-value	Result
H1: accessibility is a significant dimension of MTSQ	0.737	***	Accepted
H2: treatment Satisfaction is a significant dimension of MTSQ	0.761	***	Accepted
H3: courtesy is a significant dimension of MTSQ	0.888	***	Accepted
H4: physical environment is a significant dimension of MTSQ	0.930	***	Accepted
H5: technical quality care is a significant dimension of MTSQ	0.801	***	Accepted
H6: promptness is a significant dimension of MTSQ	0.905	***	Accepted
H7: facility premises is a significant dimension of MTSQ	0.870	***	Accepted
H8: finance factor is a significant dimension of MTSQ	0.850	***	Accepted
H9: BHL1 is a significant dimension of MTSL	0.907	***	Accepted
H10: BHL2 is a significant dimension of MTSL	0.906	***	Accepted
H11: BHL3 is a significant dimension of MTSL	0.842	***	Accepted
H12: MTSQ has a positive effect on MTSL	0.314	0.012*	Accepted
H13: treatment satisfaction has direct and positively influences on MTSL	0.264	0.037*	Accepted
H14: accessibility has direct and positively influences on MTSL	−0.970	0.412	Rejected
H15: courtesy has direct and positively influences on MTSL	0.057	0.760	Rejected
H16: physical environment has direct and positively influences on MTSL	0.067	0.814	Rejected
H17: facility premises has direct and positively influences on MTSL	0.117	0.512	Rejected
H18: finance factor has direct and positively influences on MTSL	−0.143	0.346	Rejected
H19: technical quality care has direct and positively influences on MTSL	−0.067	0.603	Rejected
H20: promptness has direct and positively influences on MTSL	0.056	0.801	Rejected

Notes: *,**Significant at $p < 0.05$ $p < 0.001$ levels, respectively

Table X.
Result of hypothesis testing

and employees at a service provider during and post hospitalization. The next dimension is the result of the healthcare treatment with such items, which has been labeled as "treatment satisfaction." The third dimension is labeled as "courtesy" which consists of items showing behavior of the service employees (Fowdar 2008; Hansen *et al.*, 2008; Duong *et al.*, 2004; Andaleeb, 2008) that instill confidence in the medical tourists for an early recovery and higher perception of satisfaction level. The medical tourist must acquire adequate knowledge and information in evaluating the healthcare services. Moreover, a guaranteed reservation boosts the medical tourists in availing themselves of a more accurate diagnostic analysis and accelerating their recovery. The dimension dealing with such items is labeled as "physical environment features" which improves the medical tourist's perception of MTSQ. The next dimension reflects the acceptance of the medical tourist's decision in finalizing the medical tourism service provider. This dimension is tagged as "technical quality care" that consists of items related to global healthcare service accreditation, well-equipped diagnostic center and healthcare infrastructure. "Promptness" is considered as one of the dimensions of

MTQS. If the actual waiting time is longer than the expected time, medical tourists' satisfaction will be negatively affected. Moreover, if the duration of the hospital stay is shorter than anticipated, their satisfaction will be positively affected. The next dimension "facility premises" consists of items related to support services augmenting the core healthcare services. These support services such as foreign exchange, internet services and telephone services are crucial for the medical tourist to connect to their friends and relatives overseas. The last dimension is labeled as "finance factor" and reflects the trade-off between service costs and service received. The cost for medical tourists include both significant cost saving and value for money. The study revealed that the accredited medical tourism service providers were perceived more favorably than the non-accredited medical tourism service providers for almost all the items. The maximum difference is observed for item 13 (global accreditation of medical care unit) and item 23 (employees of the hospital are consistently courteous and respectful). However, the mean score for non-accredited hospitals is more than for the accredited hospitals in two items: item 21 (good value for money against the medical tourism travel) and item 34 (the prescribed medicines are available inside the premises). Interestingly, the mean score is the same for both accredited service providers and non-accredited service providers for item 52 (willingness to visit the hospital for further/follow up treatments). This indicates that the medical tourists to India are interested in maintaining continuity with the healthcare services rendered to them, irrespective of hospital accreditation.

The study also verifies the reliability of the developed MTSL scale. An initial analysis of the obtained data indicated that each item was distributed normally since the skewness and kurtosis values did not violate the norms. After that, a Maximum Likelihood Estimation Method for the parameter estimation was performed. An analysis of outliers was also done by eliminating the multivariate outliers and by examining the values of standardized residuals for each factor, and it was found that MTL5, MTL7 and MTL8 crossed the recommended limit of 2.51 (Laroche *et al.*, 2001). Therefore, these high residuals are eliminated from further analysis.

The CFA of the data collected using Amos version 18.0 software indicate interesting insights in establishing the reliability assessment of the MTSL scale construction. The path coefficients between MTSL and its three dimensions range from 0.842 to 0.909, all significant at a level of 0.0. It is also observed that all standardized factor loadings are > 0.4 and significant at $\alpha = 0.05$. The reliabilities of the individual dimensions ranged from 0.81 to 0.92, which exceed the recommended level of 0.7. The Cronbach's α for the service quality instrument was 0.912 which is acceptable and thereby suggests a high internal consistency and reliability for each MTSL dimension (Nunnally, 1988). The values of the fit indices a reasonable fit of the MTSL model with the data (Byrne, 2001) and confirms that the three factors (behavioral, attitudinal and cognitive loyalty) are significant dimensions of service loyalty. The study has also uncovered the impact of service quality dimensions on service loyalty. We found that MTSQ has a positive effect on MTSL. An interesting insight is that only "treatment satisfaction" has a direct and positive influence on MTSL (Table X). The positive impact of healthcare service quality dimensions on loyalty has been highlighted in the literature (Andaleeb, 2001; Dagger *et al.*, 2007). It is also shown in Table X that no other service quality dimensions influence the service loyalty construct. A fair understanding of the impact of these dimensions on service loyalty can assist healthcare managers to formulate strategies to improve medical tourists' satisfaction. Moreover, the effect of quality dimensions on loyalty dimensions enable healthcare managers to properly design their service delivery

process with greater emphasis given to facilities associated with treatment satisfaction. Such processes will enable the managers and decision-makers of a given hospital to identify their strengths and weaknesses relative to competitors, and consequently to invest the available resources in the dimensions that improve MTSQ and overall patient satisfaction. Finally, training modules can be prepared for future managers and healthcare professionals in the field by incorporating the study's findings.

The findings of this study can serve as a guide toward further research by exploring other options such as brand image, medical tourism's emotion, perceived value and testing whether there is a possibility of a multi-tier service quality model for medical tourism. In some cases during data collection, the perception of the medical tourist's companion present in the hospital has been taken into consideration when the medical tourists are not in a state to be interviewed. This might have camouflaged the preference of the medical tourist to a certain extent. Moreover, the time frame during which the data is collected is a major limitation as medical tourism is an emerging sector, and many developments have taken place during and since the data collection phase. Hence, the medical tourist's perceptions might not reflect the present scenario in the service quality of the sample hospitals.

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Corresponding author

Professor Siba Sankar Mahapatra can be contacted at: mahapatrass2003@gmail.com