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The Medical Tourism Index and Behavioural Responses of Medical Travellers: A Mixed-method Study

Abstract

This empirical study applies complexity theory to understand complex interactions of demographics and medical tourism index (MTI) dimensions in predicting causal models leading to high and low levels of satisfaction and behavioural intentions among medical travellers. A questionnaire-based survey is applied to investigate causal models (i.e., a combination of predictors) to predict satisfaction and the behavioural intentions of international patients who travelled to Cyprus. This study also conducted an in-depth interview to identify motives, complications, and conditions stimulating the behaviours of medical travellers. According to the necessary condition analysis (NCA) results, three dimensions of MTI, excluding cost, are necessary to achieve satisfaction and desired behavioural intention. Findings from interviews reveal that medical complications and legal conditions in the origin country influence medical traveller's behaviours. The model testing results support key tenets of complexity theory and extend our knowledge of how to regulate conditions to discharge a dis/satisfied and dis/loyal patient.

Keywords: medical tourism; complexity theory; medical complication; satisfaction; behaviour

1. Introduction

The trend of travel medicine started in the 18th century and has transformed into a flourishing industry of more than US$ 100 billion (Fetscherin & Stephano 2016). "International medical travel occurs when patients cross national borders to purchase medical goods and services" (Crozier & Baylis 2010, 297). Globalization phenomena, the development in communication,

the expansion of transportation, and technological advances increase patients' ability to travel to receive high-quality health services in overseas countries. Identifying indicators of medical travellers' satisfaction is significant for the sustainable development of this industry (Yu & Ko 2012) as it may lead to a high level of desired behavioural intentions on the part of the medical traveller, which boosts the profits of the medical service providers (Han & Hyun 2015). $165.3 billion has been projected for the medical tourism market by 2023, which is attracting the attention of both academia and the industry to investigate how to market and deliver quality and cost-effective medical services to cultivate satisfied and loyal customers (Park, Ahn & Yoo 2017).

Fetscherin and Stephano (2016) developed a medical tourism index (MTI) as a comprehensive tool for measuring the attractiveness of a destination to medical tourists at a country level. Much effort has been made for MTI scale development and validation, introducing country environment, tourism destination, medical tourism costs, and facility and services as four dimensions of MTI. However, there is a lack of empirical studies on the criteria of MIT. Investigating customer satisfaction and loyalty, which are influenced by destination attributes and customers' characteristics, is recognised as a potential future path in medical tourism marketing research (De la Hoz-Correa, Muñoz-Leiva and Bakucz 2018). This study aims to fill this research gap using complexity theory to examine complex interactions of the demographics of medical travellers and four dimensions of MTI to predict the satisfaction and desired behavioural intentions of medical travellers. This study also aims to identify necessary MTI conditions and complications affecting satisfaction and the behavioural intentions of medical travellers.

This empirical study intends to address the five following research questions (*RQs*): *RQ1*: Does complexity theory explain the complex interactions of demographics and MTI

dimensions in predicting the behavioural outcomes of Cyprus international medical travellers? *RQ2*: How can demographic variables and the four dimensions of MTI be combined to achieve satisfaction and desired behavioural intentions among medical travellers? *RQ3*: Which conditions make international medical travellers dissatisfied and disloyal? *RQ4*: What are the necessary conditions to make medical travellers satisfied and loyal? *RQ5*: What complications/conditions related to medical issues stimulate medical travellers' behaviours?

To address *RQ1*, a questionnaire-based survey was administered to assess the results of model testing with key tenets of complexity theory. In response to *RQs 2* and *3*, fsQCA (fuzzy-set Qualitative Comparative Analysis), a set-theoretic analytical approach, is applied to explore causal models (i.e., recipes) for both high and low levels of satisfaction and desired behavioural intentions of medical travellers. Necessary condition analysis (NCA) is performed to identify necessary conditions for customer satisfaction and desired behavioural intentions, which assists in answering *RQ4*. An interview was conducted to explore motives and complications that influence the behaviours of medical travellers (*RQ5*).

2. Theoretical framework

2.1. Medical tourism

Medical tourism as a subset of health tourism involves the tourism industry and medical services (Yu & Ko 2012). Ghosh and Mandal (2018) remind researchers of the differentiation of health, wellness and medical tourism terms that may be used interchangeably. 'Health tourism' includes 'medical tourism' and 'wellness tourism' (Connell 2006). Medical tourism is defined as a rapid growth industry, "where people travel often long distances to overseas countries to obtain medical, dental and surgical care while simultaneously being

holidaymakers" (Connell 2006, 1094). Medical tourism covers various treatments such as orthopaedic and cardiac surgeries, cosmetic and bariatric surgeries, eye surgery, fertility and gender reassignment; transplantation; dentistry, diagnostics and check-ups (De la Hoz-Correa et al. 2018). Any other health services are considered to be 'wellness tourism' (Connell 2006).

Medical tourism is a complex phenomenon whose attributes of host country, facilities of healthcare professionals, reasonable cost, and the service quality of hospitality and tourism all affect the decision-making processes of international medical travellers (Chuang et al. 2014; Connell 2006; Crooks et al. 2011; Fetscherin & Stephano 2016; Heung et al. 2011; Hunter-Jones 2004; Moghimehfar & Nasr-Esfahani 2011; Ye et al. 2011). Crooks et al. criticised "researchers and news media [for] frequently cite[ing] low cost procedures as a key determinant for international patient travel" (2011, 726). Medical travellers, however, consider attributes of both medical services and facilities and the tourism industry to select a destination. In this vein, Yu and Ko, (2012, 82) stated that medical tourism "is conceptually full of nuances, contradictions and contrasts."

Fetscherin and Stephano borrowed the concepts of push and pull factors from tourism and economic literature to conceptualise the medical tourism constructs for measuring "the attractiveness of a country as a medical tourism destination in terms of overall country environment; healthcare costs and tourism attractiveness; and quality of medical facilities and services" (2016, 540). They reported that people with various socio-demographic backgrounds evaluate the aforementioned conditions (i.e., the four dimensions of MTI) to select a medical tourism destination. Despite the notion that medical costs play a key role in formulating medical tourists' behaviours (Crozier & Baylis 2010), Han and Hyun (2015) found that the cost of medical tourism does not function as a single consistent predictor of

patients' behaviours. Similarly, Watchravesringkan, Yan and Yurchisin (2008) reported that price plays both positive and negative roles in indicating consumers' purchase behaviour. Decoding such heterogeneous roles of medial cost along with other attributes is significant because the values offered and delivered by medical tourism involve the health of individuals for whom, in many cases (i.e., medical travellers), monetary calculations receive less weight. It is worthwhile exploring the conditions under which medical travellers are dis/satisfied and dis/loyal, as these are two fundamental outcomes in developing a profitable marketing management strategy (Kotler et al. 2014).

2.2.Medical tourism index dimensions

Four dimensions of MTI include country environment, tourism destination, medical tourism costs and medical facility and services (Fetscherin & Stephano 2016). Country environment, which focuses on the overall image of a country (Beerli & Martín 2004), political and economic stability (Connell 2006; Smith et al. 2011), ease of travel (Yu & Ko 2012), and cultural and language similarities (Lee & Davis 2005) represent the attractiveness of a country as a medical tourism destination. In this regard, Lunt et al. (2013) noted that longstanding historical and cultural connections between the UK and Cyprus are marketed as an advantage by health care providers in Cyprus. The second dimension of MTI is a tourism destination in which natural and cultural tourism attractions are identified as one of the predictors of medical traveller behaviours (Connell 2006; Fetscherin & Stephano 2016; Heung et al. 2011). Moghimehfar and Nasr-Esfahani (2011) stated that international medical travellers consider the popularity of a country in terms of tourism attractions that will offer them an enjoyable travel experience during the treatment period.

Medical tourism cost is the third dimension of MTI that is reported as a core element of medical tourism industry (Fetscherin & Stephano 2016; Ward 2016). To highlight the

importance of medical costs in relation to the behaviour of medical travellers, Hanefeld et al. presented a quote from a British patient who was seeking cosmetic surgery: "I thought to myself, if I'm going to pay £5000 and not get any result at all and be back to stage one why not go to Cyprus and pay £800 and get the same thing" (2015, 361). The quality of medical facilities (e.g., the standards and reputations of hospitals, international accreditation, state of the art medical equipment, and healthcare quality indicators) and services (e.g., the expertise and qualifications of the physicians and nurses) is the fourth MTI dimension affecting the behaviour of medical tourists (Fetscherin & Stephano 2016; Gan & Frederick 2011).

2.3.Antecedents of satisfaction and desired behavioural intentions of medical travellers

In marketing research, motivations play a significant role in customer satisfaction and loyalty (Sun & Price 2016). Jaapar et al. (2017) applied a motivational theory (Travel Career Ladder-TCL theory) and the pull and push concept to describe the effects of dental information access, dental care quality, cost-saving, cultural similarity and supporting services on patient satisfaction in Malaysia. They found that information access, dental care quality and supporting services increased satisfaction, whereas cost-saving and cultural similarity decreased satisfaction. Huang et al. (2014) argued that market orientation and relationship quality between patient and hospital can improve patient desired behavioural intentions in terms of referral and/or WoM. Park et al. (2017) used the theory of planned behaviour (TPB) to predict the satisfaction of medical tourists in South Korea. They found satisfaction is influenced by price, whereas it is not affected by health consciousness.

Ghosh and Mandal (2018) reported that in India, treatment quality, medical service quality, medical tourism expenses, medical tourism infrastructure, destination appeal, destination culture and ease of access increase the satisfaction and loyalty of medical tourists. Musa et al. (2012) applied regression analysis to test data obtained using convenience and

purposeful samplings in Malaysian hospitals. According to their findings, patients' satisfaction increased when hospitals had good reputations, quality medical facilities and skilful doctors, whereas satisfaction was not associated with the skills of nurses or hospital atmospheres and services. In contrast, Wang (2017) found that in Taiwan, service quality and patients' expectations being met increased the satisfaction and loyalty of medical tourists. Similarly, Lee, Patterson and Ngo (2017) identified service quality as having a significant and positive impact on customer satisfaction in the Vietnamese medical service market. Recently, Han et al. (2019) investigated the impacts of destination attributes (i.e., facilities, services, locale and staff, food and beverage and social environment in South Korea) and destination images on traveller loyalty. They found that the destination attributes listed above improve the destination image as well as travellers' loyalty.

Socio-demographical background (i.e., age, gender, educational level and income level) and the length of stay are considered to be predictors of individuals' behaviour in general (Bernini & Cracolici 2015; Hall et al. 1994; Huynh et al. 2014; Jean-Pierre et al. 2016; López-Cabarcos et al. 2016; Olya & Gavilyan 2017; Thrane & Farstad 2012) and medical travellers in particular (Esiyok et al. 2017). Jaipaul and Rosenthal (2003) reported that age is significantly related to the satisfaction of patients. Recently, Olya et al. (2018) found that the demographics of tourists with disabilities play a significant role in their satisfaction and loyalty and recommended that associations of the demographics with behavioural responses of the tourists with disabilities provide guidance for target marketing.

2.4. Theory and model for complex behaviours of medical travellers

Several theories (e.g., TCL and TPB) were applied to explain structural models for predicting the satisfaction and behavioural intentions of medical travellers (Jaapar et al. 2017 and Park et al. 2017). This study applied complexity theory, which has been utilised in various

disciplines (e.g., politics, economics, and biology), as the theoretical underpinning of the proposed configurational model. Complexity theory is used along with configurational modelling to explain disequilibrium and dynamic processes of complex phenomena, given that simple linear approaches cannot adequately address the complex relationships caused by the interactions of a large number of components (Baggio 2008). Hoffmann and Riley (2002, 313) stated that "complexity theory is not a new, or the only way, to do science, rather it is a set of concepts for modelling the world in a non-linear fashion."

Complexity theory helps researchers justify a combination of the predictors as causal recipes predicting the model outcome. Ordanini et al. (2014) emphasised that the causal recipe (i.e. combination of the antecedents) for simulating a complex phenomenon is more important than its ingredients (i.e., antecedents). Olya and Akhshik (2019) indicated that complexity theory well explains the decision-making process of individuals when a wide range of factors shape their perceptions, attitude and behaviours. It also helps explain why recipes for low scoring outcomes (e.g. dissatisfaction) are not mirror opposite recipes for high scoring outcomes (e.g., satisfaction). Complexity theory offers a theoretical foundation for the justification of the existence of contrarian cases and heterogeneity in model testing results. For example, if the literature supports low cost positively affecting individual behaviours, whereas in the case of medical tourism, low costs may have a negative impact on behavioural intentions of some medical travellers, who do not want to compromise the quality of medical services and their health conditions for the sake of lower costs.

Complexity theory and configurational modelling enable us to calculate models explaining conditions leading to a combination of outcomes (e.g., satisfaction and desired behavioural intention). Han and Hyun (2015) considered the satisfaction and desired behavioural intentions of medical travellers as the outcomes of the structural model at the

clinical level. In this study, a combination of satisfaction and desired behavioural intentions is used as the outcome of the configurational model. Customer loyalty is positively related to profitability and "merely satisfied customers are likely to remain in the relationship but are not committed and will switch to a competitor when an alternative offering appears to provide superior value" (Liu & Leach 2001, 149). Therefore, it is important for medical tourism providers to know how MTI dimensions need to be combined with traveller demographics to maintain satisfied and loyal medical travellers.

The precepts of complexity theory rest on six tenets, which are elaborated in Woodside's (2014) study. The results of model testing need to be assessed and supported by key tenets of complexity theory (discussed in Table 7). Considering the complexity of medical tourism (Chuang et al. 2014; Connell 2006; Crooks et al. 2011; Heung et al. 2011; Hunter-Jones 2004; Moghimehfar & Nasr-Esfahani 2011; Ye et al. 2011) as well as the complexity of tourists' behaviour (Olya & Altinay 2016; Wu et al. 2014), complexity theory enables us to provide theoretical support for the proposed conceptual model.

A combination of four MTI dimensions is represented as a configuration for predicting the behavioural outcomes of medical travellers (Figure 1). Demographics is included as a predictive configuration in the research model. This is in response Esiyok et al.'s (2017) recommendation to consider demographic variables as predictors of tourists' behavioural outcomes. The satisfaction and desired behavioural intentions of medical travellers, as an ultimate goal of medical service providers, are used as the outcome of the research model.

In asymmetric modelling, a Venn diagram is used to draw the configurational model (Figure 1). Four demographic variables—namely age, gender, educational level, and income level— and length of stay were combined as antecedents of outcomes (satisfaction and

desired behavioural intention), which is indicated as arrow A. The causal model for predicting the outcomes from MTI configurations is indicated by arrow B. All antecedents combined to predict high (C1) and low (C2) scores of outcomes. Hence, arrows A, B, and C represent causal recipes for predicting causal conditions leading to high (A1, B1 and C1) and low (A2, B2 and C2) outcome scores (Figure 1).

Figure 1

3. Methodology

3.1. Research context

Cyprus is uniquely located at the continental intersection of Europe, Africa and Asia and is thus easily accessible for international medical travellers from different parts of the world. Cyprus has a Mediterranean climate with dry summers and mild winters, alluring beaches, a safe and relaxing environment, historical sites, comfortable hotels, and hospitable residents; it provides the ideal conditions for the recuperation of patients and for their caregivers (Kartakoullis & Karlis 2002; Olya & Alipour 2015). International patients select Cyprus for the reasonably priced and high-quality medical treatments in plastic surgery, preventative treatments, artificial insemination, in vitro fertilization (IVF), dentistry, diagnostic tests, and medical/wellness spa therapies. Cyprus offers modern amenities with physicians and surgeons who are familiar with the British healthcare system and who speak English fluently, which makes it attractive to patients from the UK, Germany, the Netherlands, Russia, the Middle East, and the US markets.

Medical travel facilitators in Cyprus design, offer, and deliver attractive packages covering all administrative details of a health trip, from beginning to end, which allows a patient to focus on his or her therapy, recuperation, or, simply, relaxation (Georgiou &

Theodorou 2014). According to the Cyprus Tourism Organisation report, the country has six public and approximately 80 private hospitals that provide healthcare services for 60, 000 international medical travellers (Habari 2015). While expenditure on health care as a percentage of the GDP is almost 8%, Cyprus plans to promote medical tourism by recruiting foreign doctors and importing modern medical equipment and resources (Connell 2016).

3.2. Data and procedure

This empirical study was conducted in seven major steps: (I) survey instrument design including operationalisation of constructs, approval from ethical committee of university, permission for data collection, and pilot study; (II) main field survey administration including questionnaire-based survey and interview (responding to *RQ5*); (III) screening and entering the valid data; (IV) measurement model testing (i.e. reliability and validity check); (V) contrarian case analyses (Cramer's V test); (VI) model testing using fsQCA (including calibration, generating fuzzy truth tabulations, and counterfactual analysis) (Ragin 2014), which addresses *RQs 2* and *3*, and NCA in response to *RQ4* (Olya & Al-ansi 2018; Olya & Han 2020); and (VII) evaluation of findings with key tenets of complexity theory that responds to *RQ1* (Woodside 2014) (Figure 2). The detailed explanation of each step is presented below.

Figure 2

The management at three hospitals that provide medical services for international patients were directly contacted to get permission for administration of the survey and to communicate ethical considerations during the process. Two hospitals agreed to participate in the study on the condition of anonymity for the hospital managers and patients' information and confirmation that the data would be used only for research purposes. A set of well-constructed scale items was utilised to measure MTI dimensions, satisfaction and desired

behavioural intentions of medical travellers. Eight items for country environment, four items for tourism destination, 17 items for medical facilities and services, and four items for medical tourism costs were extracted from the work of Fetscherin and Stephano (2016). Satisfaction was gauged with five items and desired behavioural intentions with three items adapted from Han and Hyun (2015). Responses to all items included a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The questionnaires ended with demographics and length of travel questions.

The cover page of the questionnaire explained the purpose of the study and ascertained the anonymity and confidentiality of the respondents' information, which is helpful for reducing the potential risk of common method variance (Podsakoff et al. 2003). The questionnaire was reviewed by the researcher's university research ethics committee and, after approval, the survey instrument was assessed by two academicians and two experts in the field of medical tourism. A pilot study for clarifying item ambiguity and procedures of data collection was conducted by distributing questionnaires among 17 international medical travellers in a Cyprus hospital. One item for the MTI dimension of country environment (a stable exchange rate of the country) was deleted because the respondents declared that they were not tracking exchange rate fluctuations and were unable to rate this question.

Using a convenience sampling technique, questionnaires were distributed among international patients in May 2016. One of the hospital staff assisted in both identifying the 200 international medical travellers and distributing the questionnaires to those who had obtained medical treatment. It is important to collect the views of respondents after receiving medical treatment so that they have experience related to scale items (e.g., the level of their satisfaction). According to the hospital administration, all respondents had purchased a medical treatment package. A total of 147 patients participated in the survey. After dropping

17 invalid questionnaires, there were found to be a few missing values in the variables of income level and educational level, which were imputed using the median of nearby point method in SPSS.

With a response rate of 65%, further data analyses were performed using 130 valid cases. The sample of survey included 50 (38%) men and 80 (62%) women. Six (5%) of the respondents were 18–27 years old, 47 (36%) were 28–37 years old, 58 (45%) were 38–47 years old, 13 (10%) were 48–57 years old, and 6 (5%) were older than 57 years. Thirteen (10%) respondents had not completed high school, while 29 (22%) had high school diplomas, 25 (19%) had two-year college degrees, 48 (37%) had bachelor's degrees, and 15 (12%) had postgraduate degrees. In terms of income levels, 15 (12%) of respondents earned US$ 19,999 or less per year, 65 (50%) earned US$ 20,000–39,999, 38 (29%) earned US$ 40,000–49,999, 7 (5%) earned US$ 50,000–59,999, and the rest (4%) earned US$ 60,000 or more. The profile of the respondents is summarised in Table II, Appendix A.

As MTI dimensions mainly focused on destination and institutional (clinic) levels, drivers of medical travellers' behaviours at the individual level has been overlooked. Medical travellers deal with several ethical and legal issues as well as cultural and personal complications (Zarei & Maleki 2019). For example, in India, medical services such as surrogacy and reproductive services, while legal, create ethical concerns like medical advocacy and consent (Reddy et al. 2018). To tackle the complexity of medical travellers' behaviours, complication of medical treatment and the nature of the conditions in home countries need to be studied along with MTI dimensions. This will not only help marketers and service providers sustain the industry through satisfied and loyal customers, but it will also provide peace of mind for travellers in tackling the complications of treatment/conditions in addition to the difficulties and risks involved in the international travel. With this

realization, this study conducted interviews seeking to understand the causes of the behaviours of medical travellers (Harrison 2013; Mehran et al. 2020). We interviewed eleven medical travellers who were asked to explain how possible complications and/or conditions would affect their behaviours.

3.3. Data analyses

A set of preliminary analyses were performed to check the scale composition, reliability and validity of the measures (Anderson & Gerbing 1988; Fornell & Larcker 1981; Hair et al. 1998, 2017). After testing the measurement model, cross-tabulation analyses with Cramer's V test were performed to determine occurrences of contrarian cases in the association of medical costs with satisfaction and desired behavioural intention. These results demonstrated non-linear relationships of predictors with outcome factors (Olya & Gavilyan 2017; Wu et al. 2014), which was a green line for the application of an asymmetric approach (i.e., fsQCA and complexity theory) in the modelling of medical travellers' behaviour. Unlike symmetric analysis (e.g., SEM), multicollinearity between predictors and linearity of relationships between predictors (X) and outcomes (Y) are not key assumptions for asymmetric approach. Furthermore, in an asymmetric approach, as Y increases, X does not tend to increase, which helps in explaining heterogeneity as well as in considering contrarian cases in the modelling process and implications development for such cases. Descriptive statistics (i.e., the mean and standard deviation) of scale items and components were calculated, as it might be helpful for practitioners to know the rating of each scale from travellers' perspectives.

The proposed configurational model was tested with fsQCA software (Ragin 2008). To do this, the seven-point scale data was first calibrated into fuzzy set scores. The difference between fuzzy set and crisp set refers to membership function. A crisp set, which refers to an ordinary set, has a unique membership function, which means one element is either a member

of the set or is not, whereas a fuzzy set can have an infinite number of membership functions, because it permits elements to be partially in the fuzzy set. Calibration is a transformation of the crisp set data (7-point ordinal data) to fuzzy set values (i.e., 0, .5, 1). In fuzzy logic, seven-point ordinal data can be represented as set membership scores, such that '0' indicates 'full non-membership' and '1' designates 'full membership'. Using three numerical anchors, seven is specified as full membership (1), 4 as a crossover point (.5), and one as full non-membership (0). The calibration was processed using fsQCA software (Ragin 2008).

fsQCA has an advantage over csQCA (crisp set Qualitative Comparative Analysis) due to the type of data used for configurational modelling. As mentioned, fuzzy set values allow a characteristic to have any continuous value from 0 (full non-membership) to 1 (full membership), while csQCA relies on binary mode (0 and 1). As such fsQCA uses a more fine-grained data for configurational modelling, which maintains the analytical strength of this approach. In contrast, using dichotomous data in csQCA reduces the analytical strength of qualitative comparative analysis (Rihoux & De Meur 2009).

Second, fuzzy truth table algorithms were generated, which provide a list of possible conditions leading to high/low outcome scores (i.e., dis/satisfaction and un/desired behavioural intentions). Third, counterfactual analysis was performed to select a consistent and sufficient causal model for predicting high/low outcome scores. Two probabilistic criteria, coverage and consistency, were considered for refining the causal algorithms (recipes) that appeared in the truth tables. Coverage measures the empirical weight or importance of a recipe, whereas consistency measures the extent to which the cases sharing a recipe agree in displaying the outcome. In other words, coverage represents the relative importance of different paths to an outcome and consistency represents the proportion of observed cases that are consistent with the pattern (Ragin 2006). In fact, *coverage* and

consistency in asymmetric modelling are analogues to *coefficient of determination* (R^2) and *correlation* (r) in symmetric approaches, respectively. Both coverage and consistency ranged from 0 to 1 where 0 represents a low level of coverage and consistency and 1 indicates a high level of coverage and constancy. Cut-offs of frequency and consistency measures were 2 and .8, respectively (Ragin 2006, 2008). To calculate coverage and consistency measures, Equation 1 and 2 are used, respectively:

Coverage: $(X_i \leq Y_i) = \sum\{min(Xi, Yi)\}/\sum(Yi))$ (Equation 1)

Consistency: $(X_i \leq Y_i) = \sum\{min(Xi, Yi)\}/\sum(Xi))$ (Equation 2)

In these equations, Xi denotes case i's membership score in set X and Yi denotes case i's membership score in the outcome condition (Ragin 2014). In terms of sufficiency, X (recipe) is considered as a subset of Y (outcome: satisfaction and loyalty).

These three phases of fsQCA, which functions based on the Quine-McCluskey technique, were implemented according to Ragin's (2008) guidelines. To check predictive validity, the sample was divided into two subsamples. The causal model obtained from subsample 1 was tested using subsample 2 (the holdout sample) to check the predictive ability of the model with another sample (Gigerenzer & Brighton 2009). A high level of coverage and consistency provides evidence of the predictive validity of the model. In the last step, the results from the fsQCA were assessed with the six tenets of complexity theory (Woodside 2014).

Causal recipes from fsQCA show a sufficient combination of predictors, whereas the NCA recognises the necessary predictors of the expected outcome. The present study identifies necessary conditions for attaining the satisfaction and desired behavioural intentions of medical travellers. Consistency is a measure used to assign necessary factors

(Dul 2016; Olya & Al-ansi, 2018; Olya & Han 2020). Findings of the NCA can help managers know how to manage conditions in which necessary conditions are satisfied, because the interested outcome is less likely to be obtained without those conditions.

3.4. Reliability and validity

A rigorous set of preliminary tests was performed to check construction and validation of the measurement instruments. Cronbach's alpha and composite reliability were used to test reliability of the study measures. As shown in Table 1, the magnitudes of Cronbach's alpha, Dijkstra-Henseler's rho (ρ_A) and the composite reliability for all factors were larger than .7, a commonly accepted cut-off, which indicates the reliability of the study scales (Hair et al. 2017). The means and standard deviations of each item were calculated and are presented in Table 1. These descriptive results indicated the level of respondents' agreement to each item (Table 1).

Table 1

Since this study is the first attempt to empirically test the effect of MTI dimensions (Fetscherin & Stephano 2016) in the context of Cyprus, both exploratory and confirmatory factor analyses were conducted to cross-check the structure and composition of scale items. Results of the exploratory factor analysis showed that the values of factor loading for all items were greater than .45 and appeared under relevant factors (Table I, Appendix A). There was no sign of cross-loading. According to the results of Harman's single-factor analysis, which is one of the simplest statistical remedies for checking potential common method bias, no general factor emerged, indicating that common method bias did not threaten the validity of the study measures (Podsakoff et al. 2003). As shown in Table 1, the results of confirmatory factor analysis showed that all items significantly loaded under assigned variables, with standardised factor loading higher than the acceptable level (SFL>.5, $p<.001$).

During the CFA, one item from the country environment (that Cyprus has low corruption) was dropped to meet the criteria for constructing validity (Anderson & Gerbing 1988).

Standardised root mean squared residual (SRMR) as a tool for checking fit validity of the measurement model is calculated using SmartPLS. The commonly accepted range of SRMR is between 0 and .08 (Hu and Bentler 1999). According to the results, SRMR is .072, indicating that the proposed measurement model fits well with the empirical data. To check convergent validity, average variance extracted (AVE) values were calculated for all factors. As Hair et al. (1998) recommended, AVE values were larger than .5 and were smaller than corresponding values of composite reliability for each factor (Table 1). The heterotrait-monotrait ratio of correlation (HTMT) was calculated to cross-check discriminate validity of the constructs. As shown in Appendix A (Table III), the values of HTMT were smaller than the cut-off point of .85, which confirms discriminate validity (Henseler, Ringle & Sarstedt 2016). The magnitude of AVE for all components was larger than MSV and ASV, reconfirming the discriminate validity of the study measures (Anderson & Gerbing 1988; Fornell & Larcker 1981).

4. Results

4.1. Results of contrarian cases

Two examples of occurrences of contrarian cases in the association of medical tourism antecedents (e.g., medical costs) with outcomes (satisfaction and desired behavioural intention) are presented in Table 2. The results of cross-tabulations showed that medical travellers who rated medical costs in Cyprus as being high are still satisfied (30 cases) and loyal (36 cases). According to the Cramer's V tests results, there is a significant medium effect size for both examples (Cohen 1977). This result confirmed the existence of contrarian cases and heterogeneity in predicting the behaviours of medical travellers (Table 2).

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Table 2

4.2. Configurational model testing

The results of analysis of the configurational model, which includes demographic variables and MTI dimensions as causal configurations to predict the behavioural outcomes of medical travellers, are presented in Tables 3 and 4. Arrow A indicates the causal models calculated from demographic configuration, and arrow B represents the causal models calculated from the MTI configuration, which is listed in Table 3. The fsQCA results offer three causal models for the demographic configuration (i.e., A1) and two causals models for the MTI configuration (i.e., B1) to achieve high levels of behavioural outcomes (i.e., satisfied and desired behavioural intentions). The fsQCA for the negation of outcome provides two causal models for the demographic configuration (i.e., A2) and one model (i.e., B2) for the MTI configuration to describe the conditions leading to low levels of behavioural outcomes (i.e., dissatisfied and undesired behavioural intentions). The negation of outcomes (*~outcomes*) equals one minus the outcome score (Ragin 2014). The causal algorithms for high levels of outcome (A1 and B1) were not mirror opposites of the recipes for the negation of outcomes (A2 and B2) (c.f. Table 3).

Model 1 (Table 3: A1) shows that less educated females who stayed for shorter periods of time were more satisfied and loyal medical travellers. Unlike the results of conventional research (Table IV in Appendix A), this is not the only path (i.e. model) leading to the outcome (see A1: Model 2 and Model 3). Model 2 also offers a sufficient and consistent solution to predict a high outcomes score. Income level plays a negative role in Model 2, while it plays a positive role in Model 3. This means that females who had a high income and stayed for shorter periods of time to obtain medical treatment in Cyprus were satisfied and loyal tourists. As shown in Table 3, less educated females who had a low

income and stayed for a shorter period of time were not satisfied and loyal medical travellers (A2: Model 1).

According to the second model (A2: Model 2), those females who were older, less educated and planned to stay for a short time treatment in Cyprus were less likely to be satisfied and loyal. In terms of the gender, the fsQCA results are in line with Hall et al. (1994), who showed that females are more satisfied with medical visits. As seen in Model 1 (B: Table 3), less educated medical travellers are more satisfied and loyal. As shown in Table 3 (A1), income levels both negatively (Model 2) and positively (Model 3) contributed to achieving high levels of satisfaction and desired behavioural intentions. According to the fsQCA results, the length of stay negatively contributed to the satisfaction and desired behavioural intentions of international medical travellers. Thrane and Farstad (2012) reached the same conclusion, finding that holidaymakers who stayed for a shorter time in Norway were likely to be more satisfied. However, the length of stay in the case of medical tourism is more complex, as it may be influenced by many other factors (e.g., type of treatment).

As shown in Table 3, the fsQCA results from the MTI configuration (B1) offer two causal recipes leading to high outcome scores (coverage: .976, consistency: .841). The first model indicates that medical travellers are satisfied and loyal to a destination that offers them prominent tourist attractions and quality medical facilities and services (coverage: .961, consistency: .840). According to the fsQCA results, the medical facilities and services of Cyprus positively contributed to the satisfaction and desired behavioural intentions of medical travellers. Model 2 indicates that a high level of satisfaction and desired behavioural intentions results from high medical costs, high quality of medical facilities and services, and low country environment (i.e. overall country image, stable economy, safety, and ease of travel).

To show the asymmetric relationship of causal model (X) and outcome (Y), a fuzzy XY plot of Model 2 was sketched and is illustrated at the bottom of Table 3. According to Wu et al., Model 2 conforms to an "asymmetric sufficient-but-not-necessary relationship" (2014, 1648). The fsQCA simulates one causal model leading to a low level of satisfaction and desired behavioural intentions (coverage: .645, consistency: .854). The causal model depicted as the XY plot indicates that satisfaction and desired behavioural intentions among medical travellers is caused by an attractive tourism destination with quality medical tourism facilities and services, even if the country does not offer a good environment (Table 3, B2).

Table 3

The fsQCA results from a combination of demographic and MTI configurations offer five casual models for a high level of outcomes (C1) and one model for a low level of outcomes (C2), which are presented in Table 4. For example, Model 1 indicates that a high level of satisfaction and desired behavioural intentions is achieved when medical travellers are older, less educated, and stayed for a shorter time to obtain medical treatments in a destination with a high country environment, high tourism destination, high medical cost and high facilities and service. The XY plot for Model 3 is generated and presented at the bottom of Table 4. This graph shows an asymmetric relationship between complex interactions of all antecedents (X: combination of demographics and MTI dimensions) and outcomes (Y: satisfaction and desired behavioural intentions).

According to the results from the fsQCA for outcome negation including all antecedents (Table 4, C2), young and educated females who had a low income and stayed for a longer time treatment in Cyprus were not satisfied and loyal medical travellers; they gave low ratings to the country's environment and tourism destination and high ratings to medical costs and service and facilities (coverage: .303, consistency: .859). The fsQCA results

approved the heterogeneous associations of behavioural outcomes of tourism medical travellers and their antecedents (e.g. the positive role of the country's environment in Model 2 and its negative role in Model 5 in Table 4).

Table 4

4.3. Results of necessary condition analysis

Results of the NCA are provided in Table 5. The necessary antecedent demonstrated a consistency above .9 (Dul 2016). According to the NCA results of the country environment, tourism destination as well as facilities and services are necessary factors for achieving satisfaction and desired behavioural intentions (Table 5). This means that medical travellers might not be satisfied and loyal in the absence of these three MTI dimensions. Medical tourism cost is not necessary antecedent of satisfaction and desired behavioural intentions.

Table 5

4.4. Predictive validity

The results of predictive validity are presented in Table 6. The data sample was divided into two subsamples. The data in subsample 1 was used to calculate causal models, with MTI dimensions, for predicting high outcome scores (coverage: .972, consistency: .836). Two causal models (M1 and M2) were then tested using data in subsample 2. As shown in the XY plots displayed at the bottom of Table 6, high levels of coverage and consistency provide evidence of the predictive validity of the proposed configurational model, as is strongly recommended by Gigerenzer and Brighton (2009) and Wu et al. (2014).

Table 6

4.5. Findings from interviews

During the interviews, medical travellers articulated the various motives, complications and conditions that persuaded them to travel to Cyprus. For example:

> "My wife and I came across an issue that we couldn't handle in Jordan. Our families expected us to make a baby, and we reached a point that we had to find a solution. Because of cultural and family issues, we decided to receive IVF treatment in Cyprus. To be honest, we told our families, relatives and friends that we planned to travel to Cyprus for leisure and just to spend our holiday in a nice Mediterranean island. That's why we went through a travel agency that took care of both our medical treatment and travel arrangements. It was a wise decision because it worked for us, and everything is going very well. So far so good. If somebody needs such treatments, I would advise them to consider IVF in Cyprus."

One of the travellers faced situational complications in their home country that were not an issue in Cyprus.

> "I liked to do surgery in my country [did not prefer to disclose the name of the country], but I have to wait either a long time or pay lots of money to jump in the queue. I also felt it is not ethical to do so. I did a simple calculation and found that I could easily travel to Cyprus and do the operation without waiting or violating the rights of patients who were ahead of me in the waiting queue. To me, it is a relief, and I happily recommend others do so."

One of the medical travellers travelled from the UK to Cyprus due to medical complications. She also enjoyed the tourism aspect of journey.

> "For a beach lover like me, it's nice to be on sunny and sandy beaches. Well, my doctor told me that Cyprus weather is the cure for my disease. I intend to come here next summer as well. I would have the chance to get professional treatments and also enjoy an island holiday with my husband."

One of the interviewees was a circumvention tourist who travelled to Cyprus due to legal issues with fertility treatment in her home country.

> "There was an online ad that said, 'Cyprus is a great place to combine treatment with a holiday'. My partner and I liked it very much and concluded that we should get [fertility] treatment there and, at the same time, select the gender of our baby, which is not legal in our country. That's amazing because we had a boy and would love to have a baby girl. We are happy with the services. The doctors and nurses are professionally and friendly. I would recommend Cyprus as a place where dreams come true."

5. Discussions

The assessment fsQCA results with the six major tenets of complexity theory are outlined in Table 7. According to the results from fsQCA, all tenets of complexity theory were supported, meaning that this theory explained well the configurational model for predicting high/low outcome levels for medical travellers, considering their demographics and the MTI conditions of Cyprus. A combination of significant predictors of the behavioural outcomes of medical travellers provide more pragmatic and realistic conclusions about the formation of the behavioural responses of medical travellers. This is in line with the works of many scholars (e.g., Chuang et al. 2014; Connell 2006; Crooks et al. 2011; Fetscherin & Stephano 2016; Heung et al. 2011; Hunter-Jones 2004; Moghimehfar & Nasr-Esfahani 2011; Ye et al. 2012), who found medical tourism is a complex phenomenon and that many factors must be considered in the marketing management of this type of business. This is in line with Kotler's statement that "marketing decisions must be made in the context of insufficient information about processes that are dynamic, nonlinear, lagged, stochastic, interactive, and downright difficult" (1967, 1).

Table 7

Findings from contrarian cases demonstrated the heterogeneous role of predictors of medical travellers' behaviours. This heterogeneity is identified by Han and Hyun (2015) and

Watchravesringkan et al. (2008), indicating that high level of medical costs does not necessarily lead to low levels of satisfaction and desired behavioural intentions. Han and Hyun (2015) justified this heterogeneity through the classification of medical travellers based on the socio-economic class of individuals or the level of development of their origin countries. Nevertheless, discarding the occurrences of contrarian cases, which occur in conventional research, leads to less accurate conclusions about the formulation of behavioural outcomes of medical travellers based on MTI dimensions (e.g., medical costs). Specifically, in the case of medical tourism, people care about improving their health to such an extent that they are taking the financial and social risks of travelling abroad to receive medical services.

Evidence for the existence of contrarian cases and heterogeneity in medical travellers' behaviours assures the complexity of the phenomenon such that the TPB (Park et al. 2017) and TCL theories (Jaapar et al. 2017) are insufficient to explain the complex interactions of medical travellers' demographics and the MTI dimensions in predicting their behaviours. This study applied complexity theory and fsQCA to explain the heterogeneous role of conceptual model antecedents. fsQCA results showed that the association of MTI dimensions (e.g., medical costs) with the behavioural responses of medical travellers is an asymmetric rather than a symmetric relationship. In other words, a combination of dimensions of MTI must be employed to simulate the behaviour of medical travellers. This notion is in accordance with the findings of Watchravesringkan et al. (2008), who found that price functions as both a positive and negative indicator of customer purchase intention, while price role (positive/negative action) varies based on its association with other factors (e.g., product/service performance). Such findings demonstrate that the role of each single antecedent (positive or negative) must be assessed in the context of its combination with other antecedents in a causal recipe (Ordanini et al. 2014).

The inclusion of demographic variables in predicting the behavioural outcomes of medical travellers increases the complexity of medical tourism. This is recommended by previous research (Han & Hyun 2015; Olya et al. 2018). In terms of age of medical travellers, fsQCA results were in line with Jaipaul and Rosenthal (2003), who reported that younger patients are more satisfied with medical services. In accordance with Huynh et al. (2014), less educated medical travellers are more satisfied and loyal. According to the fsQCA results, the role of income level was heterogeneous, varying according to the attributes of other predictors in a causal recipe. This may confirm findings of Jean-Pierre et al. (2016) that the satisfaction of patients did not significantly vary across different ranges of income level.

fsQCA results revealed that four MTI dimensions positively contribute to medical travellers' satisfaction and desired behavioural intentions. Connell (2006), Fetscherin and Stephano (2016), Heung et al. (2011), and Moghimehfar and Nasr-Esfahani (2011) highlighted the significant impact of the attractiveness of a destination (e.g., natural and cultural touristic sites) in medical tourism industry. Appeasing in all causal recipes for high satisfaction and desired behavioural intentions (Tables 3 & 4) was the relation between medical facilities and services and improved satisfaction and desired behavioural intentions, which agrees with past research reporting that the reputation of hospitals and doctors (Heung et al. 2011; Gan & Frederick 2011; Ghosh & Mandal 2018) and medical equipment (Connell 2006; Fetscherin & Stephano 2016; Wang 2017) are the key drivers of medical tourism.

Nonetheless, Model 2 (B1 in Table 3) and Model 5 (C1 in Table 4) indicated that country environment and tourism destination may not act as positive predictors of satisfaction and desired behavioural intentions. These heterogeneities and complexities may result from potential complications and conditions, such as legal and operational issues, which were concurrently explored during in-depth interviews with travellers. These results are similar to

the findings of Heung et al. (2011) who found that, while some conditions (e.g., medical costs) are not ideal from the medical traveller's perspective, other positive factors (e.g., expertise in cancer treatment) may affect their decision to travel and receive medical services in Hong Kong. This complex process of destination selection is not limited to a specific medical tourism destination (e.g. Cyprus or Hong Kong), but refers to the complex nature and interactions of medical tourism conditions, which medical travellers evaluate through asymmetric thinking.

Results of the NCA revealed that medical cost is not a necessary but is a sufficient means to achieve satisfaction and desired behavioural intentions. Jaapar et al. (2017) also found that cost is not associated with customer satisfaction. These findings are in accordance with recent marketing studies that recommend that complexity theory and an asymmetrical approach must be applied to solve such complex social phenomena (Han et al. 2019; Olya & Gavilyan 2017; Wu et al. 2014).

6. Conclusion and implications

This empirical study provides both theoretical and methodological advances in the current knowledge of medical tourism marketing. The theoretical contribution of this study is the application of complexity theory to support a conceptual model that involves demographic and MTI configurations to predict the satisfaction and desired behavioural intentions of medical travellers. Evaluation of model testing results with key tenets of complexity theory confirm that this theory explains the complex interactions of demographics and MTI configurations stimulating medical travellers' behaviours. Findings from interviews indicated that various motives, legal/ethical issues and medical complications can influence the behaviours of medical travellers.

Olya, H., & Hashemi Nia, T. (2020). The Medical Tourism Index and Behavioral Responses of Medical Travelers: A Mixed-Method Study, Journal of Travel Research, Doi: 10.1177/0047287520915278.

Unlike previous research on medical tourism, contrarian cases are included in the modelling of complex behaviours of medical travellers. Of particular pertinence to practitioners, this study sheds light on the complex interactions of MTI dimensions (i.e., country environment, tourism destination, medical tourism costs, and facility and services) with demographics that make for satisfied and loyal medical travellers. In distinction from traditional research, which develops a single predictive model, this study developed alternative models for obtaining high levels of desired behavioural outcomes. For example, a country with prominent tourism attractions and high-quality medical facilities and services can leave medical travellers satisfied and loyal (Model 1: B1 in Table 3). Alternatively, satisfaction and desired behavioural intentions can be achieved if a country offers good medical facilities and services with high costs, although the country environment is not impressive (e.g., a poor overall country image and an unstable economy) (Model 2: B1 in Table 3). These findings can be used by policy makers and marketers as a guideline to know how to manage the conditions in which medical travellers express the desired behavioural responses.

The results from the fsQCA contribute to our knowledge and understanding in medical tourism research that the formulation of medical tourists' behavioural responses is not influenced by a single and negative predictor alone (e.g., medical tourism costs). In other words, a combination of the antecedents must be considered as the causal conditions for predicting medical travellers' behaviour. Importantly, the income level of tourists can act as both a positive and negative antecedent in the causal recipes leading to high outcome scores. It is interesting that a condition in which low-income medical travellers received high-quality medical facilities and services with high costs still led to satisfied and loyal medical travellers (see Model 2: C1 in Table 4). These results confirmed the complexity of medical tourism by

recalling the fact that patients' health is one of their top priorities and that they tend to use expensive treatments and to travel abroad to obtain high-quality medical treatments, even if they have lower incomes (Model 4: C1 in Table 4).

This empirical study extends the current knowledge of medical travellers' behaviours through the calculation of causal recipes for the negation of behavioural responses. In contrast to previous research, this study revealed that causal recipes for achieving high levels of satisfaction and desired behavioural intentions among medical travellers are not the mirror opposites of algorithms indicating low outcome scores. Furthermore, this empirical study successfully evaluated the causal conditions leading to the combination of satisfaction and desired behavioural intentions into one outcome condition. According to NCA results, country environment, tourism destination and facilities and services are necessary for attaining satisfaction and desired behavioural intentions. From medical travellers' perspectives, cost was not a necessary condition for travellers to be satisfied and loyal, which may result from the complex nature of medical tourism and the complexity of medical travellers' behaviours.

6.1. Policy implications

Our findings can advise marketers and planners on how to attune to the demographics of medical tourists with MTI components in a way that leads to high levels of satisfaction and desired behavioural intentions. Causal models from demographics configuration help medical tourism marketers to plan a sustainable marketing plan through targeted marketing. Since alternative models are offered, causal conditions can meet the needs of various population segments (old/young, high-income/low-income, less-educated/educated, male/female). As complexity theory posits that a combination of antecedents need to be matched to achieve the desired outcome or outcomes, each causal model can be used by managers as a recipe that

contributes to the satisfaction and desired behaviours of medical travellers. Female and less educated patients who stay for a shorter time are suggested as a possible segment to be targeted by medical service providers in Cyprus. An alternative segment is young and female medical travellers who have a low income level. A third segment is female medical travellers with a high income level who stay for a shorter time in Cyprus. As the length of stay appeared in two causal recipes that resulted in high levels of satisfaction and desired behavioural intentions, it is proposed that there should be a focus on designing short-term medical tourism packages.

Cyprus medical service providers, with the aid of technological tools, can scrutinise the profile and preferential patterns of customers, which should not be matched with any causal recipe related to low levels of satisfaction and desired behavioural intentions (i.e. outcome negation). For example, service providers can launch a widget for live chat on their websites, which would offer an opportunity for collecting the above information. Such platforms would improve communication between service providers and potential customers, which helps in planning for acquisitions and lead generations based on types of complications, conditions and motivations. In other words, such data could be used to target new markets in countries where potential consumers are dealing with operational, legal, ethical, cultural and other types of complications.

Policy makers in Cyprus must actively engage in providing quality facilities and services in desirable country environments and tourism destinations. Based on the fsQCA and NCA results, these factors emerged as sufficient and necessary conditions, respectively, for the satisfaction and desired behavioural intentions of medical travellers. Hence, decision makers need to improve the quality of medical facilities in hospitals, apply for internationally recognised accreditations, recruit highly qualified physicians and nurses and, importantly,

extend their international marketing communications regarding these high-quality facilities and services.

As medical tourism costs in Cyprus appeared to be unnecessary antecedents and did not play a negative role in achieving satisfaction and desired behavioural intentions among medical travellers, managers may have more flexibility in pricing strategies for the current medical tourism packages. They can also invest in the medical facilities and services required for cancer treatment, cosmetic surgery, IVF and stem cell treatments. As reported in the Medical Tourism Climate Survey 2016, the greatest increase in international patient numbers over the next five years is expected to come from the treatments suggested above (Ward 2016).

In most of the causal recipes, with the exception of Model 2 in B1 and Model 5 in C1, the country's environment (e.g., cultural and language similarities, stable economy, safety, and overall country image) and attractive tourist destinations are positively associated with high levels of satisfaction and desired behavioural intentions. Medical service providers can benefit from the resources of the Cyprus environment to increase the attractiveness of their medical tourism packages. Marketers can promote the attraction of the destinations using strategic use of various communication channels, such as online advertisements, product placement in movies and direct marketing approaches. The convenience and safety of travel to Cyprus should be highlighted in marketing communication plan. Medical service providers should work collaboratively with the Cyprus Tourism Organisation (CTO) and destination marketing companies (DMCs) to upgrade the overall image of the country using organising events and celebrity endorsement as well as sponsoring international trade shows and festivals. One possible advancement in the current Cyprus plan for promoting medical tourism is recruiting foreign doctors who are familiar with the languages (e.g., English,

German, Persian, and Arabic) and cultures of the most frequent international medical travellers. Negative experiences of medical travellers regarding a different language and culture may lead to their dissatisfaction and undesired behavioural intentions (see Model 1: C2 in Table 4).

Lessons from the interview revealed that various complications/conditions in home countries exist that encourage potential customers to travel to Cyprus for medical treatments. Such factors must be considered as push factors, along with pull factors in the destination, in the marketing plan. A synergy among the stakeholders is required to develop a marketing plan for establishing a worldwide brand in a specific treatment. Cyprus can be a hub of fertility tourism which can attract medical travellers of countries from three surrounding continents due to several pulling factors such as safety, convenience and ease of travel, internationally certified staff and doctors and quality facilities and services. Marketers can highlight these advantages along with tourism attractions. Specifically, pre-and-post treatment can be bundled with appropriate recreational and leisure tours that not only help patients to physically and psychologically deal with their health issues, but also facilitate the process of treatment for their caregivers through offering a fun and unique experience travel.

Medical tourism is a rising global phenomenon, as medical travellers can select a destination offering high-quality and cost-effective treatment, minimised waiting time, and natural, cultural, and social attractions. From the supply side, medical tourism is one of the most significant added-value services in the industry, motivating governments to develop national strategies for attracting patients from different parts of the world. Therefore, the decision makers in Cyprus' medical tourism industry ought to plan to distinguish Cyprus as a well-known fertility tourism destination at clinical, national, and internationals levels.

Planners might need to organise technical committee meetings with the participation of key contributors to make sure high-quality services are offered and delivered to the patients.

6.2. Limitations and pathways for future research

One of the limitations of this study is that it is a cross-sectional research and data was collected over a period of one month. It would be worthwhile to retest the proposed configurational model with longitudinal data. The proposed model was crafted based on four general dimensions of MTI that measure the overall performance of medical tourism at the country level and was used for the asymmetric modelling of the behavioural outcomes of international medical travellers. Although we provide evidence of the predictive validity of the proposed model, the calculated causal model can be used as an action plan for promoting Cyprus medical tourism, and the findings may have limited generalisability to other countries. Future studies can develop a configurational model with dimensions of MTI and can test the model using a bigger data set obtained from countries with various conditions. Scholars can benefit from pragmatic approaches (e.g., fsQCA with complexity theory) that help to include a wide range of antecedents (e.g., language and culture of travellers, type of treatment, various types of risks perceived by medical travellers, pre-and post-operation issues) into the configurational model for predicting the behaviours of medical travellers. An individual's well-being is highly related to his/her emotions. Future research can investigate the relationship of medical travellers' emotions with their physical and psychological well-being before, during, and after their experience with medical tourism.

Appendix A:

Table I. Results of exploratory factor analysis

Table II: Profile of the respondents

Table III: Results of HTMT for discriminate validity

Table IV: Results of correlation analysis

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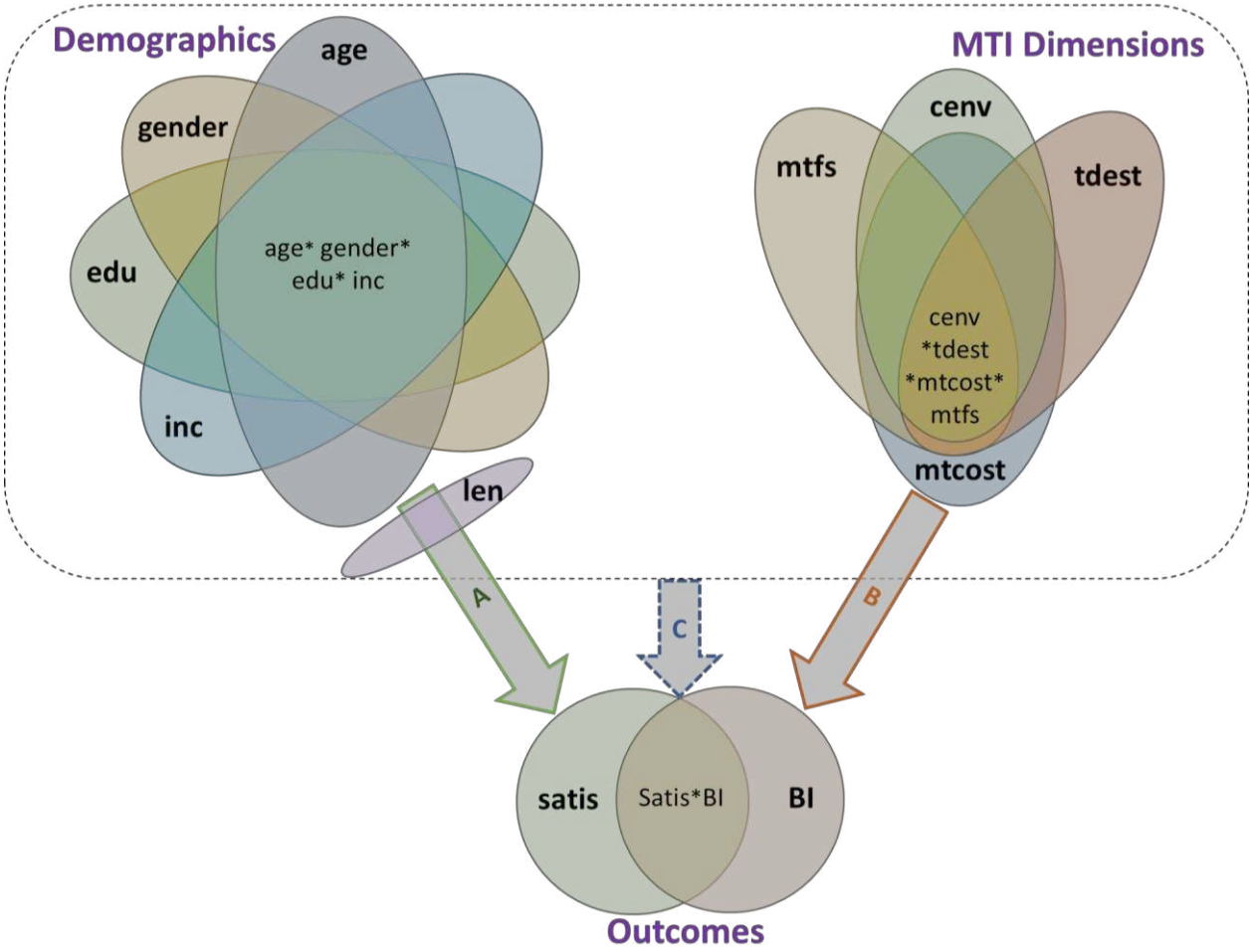

Note: MTI stands for medical tourism index, edu: education, inc: income level, len: length of stay, cenv: country environment, tdest: tourism destination, mtcost: medical tourism costs, mtfs: facility and services, satis: satisfaction, and BI: behavioral intentions. Arrow A includes A1 (recipes from demographics configuration for high score of outcome) and A2 (recipes from demographics configuration for low score of outcome); B includes B1 (recipes from MTI configuration for high score of outcome) and B2 (recipes from MTI configuration for low score of outcome), C includes C1 (recipes from combination of demographics and MTI configurations for high score of outcome) and C2 (recipes from combination of demographics and MTI configurations for low score of outcome).

Figure 1. Research configurational model

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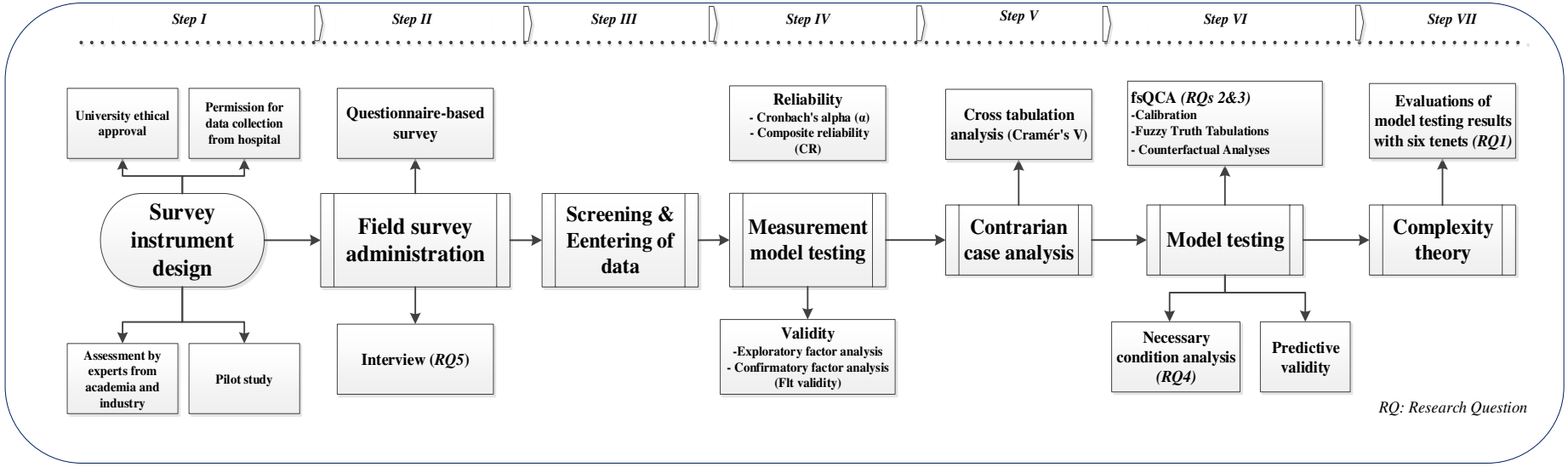

Figure 2. The research design

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Table 1. Results of confirmatory factor analysis to test measurement model

Factors	Item	SFL	AVE	MSV	ASV	Mean	Std. D.
Behavioural intentions (α: .785, ρ_A: .792, CR: .784)			.549	.474	.273	5.536	1.060
	L1	.733**					
	L2	.822**					
	L3	.659**					
Satisfaction (α: .870, ρ_A: .885, CR: .868)			.574	.504	.258	5.403	1.108
	S1	.586**					
	S2	.737**					
	S3	.874**					
	S4	.881**					
	S5	.666**					
Country environment (α: .845, ρ_A: .792, CR: .784)			.502	.152	.096	4.803	1.301
	CE2	.640**					
	CE3	.702**					
	CE4	.956**					
	CE5	.406**					
	CE6	.626**					
	CE7	.800**					
Tourism destination (α: .899, ρ_A: .9082, CR: .889)			.672	.137	.050	5.570	1.259
	TD4	.913**					
	TD3	.941**					
	TD2	.738**					
	TD1	.651**					
Medical tourism costs (α: .919, ρ_A: .959, CR: .914)			.734	.063	.031	4.204	1.728
	MC4	.866**					
	MC3	.789**					
	MC2	.730**					
	MC1	.704**					
Facility and services (α: .953, ρ_A: .956, CR: .951)			.538	.397	.184	5.798	.871
	FS1	.876**					
	FS2	.813**					
	FS3	.744**					
	FS4	.611**					
	FS5	.504**					
	FS6	.789**					
	FS7	.883**					
	FS8	.580**					
	FS9	.581**					
	FS10	.764**					
	FS11	.760**					
	FS12	.807**					
	FS13	.763**					
	FS14	.655**					
	FS15	.766**					
	FS16	.780**					
	FS17	.659**					

Note: SFL: standardized factor loading, AVE: average variance extracted, MSV: maximum shared squared variance, ASV: average shared square variance, CR: composite reliability. St. D.: standard deviation. **: SFL is significant at the .001 level.

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Table 2. Results of cross-tabulation of medical tourism cost with behavioural intentions (a) and satisfaction (b)

Negative contrarian cases (36 cases =27%) indicating ~A → O

(a) Medical tourism cost (low healthcare costs) (Cramer's V= .303, *P<.01*)		Behavioural intentions					Total
		Somewha	Neutral	Somewha	Agree	Strongly	
Strongly disagree	Count	2	3	5	1	3	14
	% within Medical Cost	14.3%	21.4%	35.7%	7.1%	21.4%	100.0%
	% of Total	1.6%	2.3%	3.9%	.8%	2.3%	10.9%
Disagree	Count	0	0	5	2	4	11
	% within Medical Cost	.0%	.0%	45.5%	18.2%	36.4%	100.0%
	% of Total	.0%	.0%	3.9%	1.6%	3.1%	8.6%
Somewhat disagree	Count	0	0	4	4	8	16
	% within Medical Cost	.0%	.0%	25.0%	25.0%	50.0%	100.0%
	% of Total	.0%	.0%	3.1%	3.1%	6.3%	12.5%
Neutral	Count	0	10	16	7	5	38
	% within Medical Cost	.0%	26.3%	42.1%	18.4%	13.2%	100.0%
	% of Total	.0%	7.8%	12.5%	5.5%	3.9%	29.7%
Somewhat agree	Count	0	2	8	8	4	22
	% within Medical Cost	.0%	9.1%	36.4%	36.4%	18.2%	100.0%
	% of Total	.0%	1.6%	6.3%	6.3%	3.1%	17.2%
Agree	Count	0	2	3	5	1	11
	% within Medical Cost	.0%	18.2%	27.3%	45.5%	9.1%	100.0%
	% of Total	.0%	1.6%	2.3%	3.9%	.8%	8.6%
Strongly agree	Count	0	2	1	6	7	16
	% within Medical Cost	.0%	12.5%	6.3%	37.5%	43.8%	100.0%
	% of Total	.0%	1.6%	.8%	4.7%	5.5%	12.5%
Total	Count	2	19	42	33	32	128
	% within Medical Cost	1.6%	14.8%	32.8%	25.8%	25.0%	100.0%
	% of Total	1.6%	14.8%	32.8%	25.8%	25.0%	100.0%

Negative contrarian cases (30 cases =23%) indicating ~A → O

(b) Medical Cost (low healthcare costs), (Cramer's V= .322, *P<.001*)		Satisfaction						Total
		Disagree	Somewha	Neutral	Somewha	Agree	Strongly	
Strongly disagree	Count	2	3	3	1	5	0	14
	% within Medical Cost	14.3%	21.4%	21.4%	7.1%	35.7%	.0%	100.0
	% of Total	1.6%	2.3%	2.3%	.8%	3.9%	.0%	10.9%
Disagree	Count	0	0	1	5	2	3	11
	% within Medical Cost	.0%	.0%	9.1%	45.5%	18.2%	27.3%	100.0
	% of Total	.0%	.0%	.8%	3.9%	1.6%	2.3%	8.5%
Somewhat disagree	Count	0	0	2	6	1	7	16
	% within Medical Cost	.0%	.0%	12.5%	37.5%	6.3%	43.8%	100.0
	% of Total	.0%	.0%	1.6%	4.7%	.8%	5.4%	12.4%
Neutral	Count	0	0	7	18	10	3	38
	% within Medical Cost	.0%	.0%	18.4%	47.4%	26.3%	7.9%	100.0
	% of Total	.0%	.0%	5.4%	14.0%	7.8%	2.3%	29.5%
Somewhat agree	Count	0	0	3	5	9	5	22
	% within Medical Cost	.0%	.0%	13.6%	22.7%	40.9%	22.7%	100.0
	% of Total	.0%	.0%	2.3%	3.9%	7.0%	3.9%	17.1%
Agree	Count	0	0	2	3	4	2	11
	% within Medical Cost	.0%	.0%	18.2%	27.3%	36.4%	18.2%	100.0
	% of Total	.0%	.0%	1.6%	2.3%	3.1%	1.6%	8.5%
Strongly agree	Count	0	0	3	3	6	5	17
	% within Medical Cost	.0%	.0%	17.6%	17.6%	35.3%	29.4%	100.0
	% of Total	.0%	.0%	2.3%	2.3%	4.7%	3.9%	13.2%
Total	Count	2	3	21	41	37	25	129
	% within Medical Cost	1.6%	2.3%	16.3%	31.8%	28.7%	19.4%	100.0
	% of Total	1.6%	2.3%	16.3%	31.8%	28.7%	19.4%	100.0

Note: A stands for antecedent and O is outcome.

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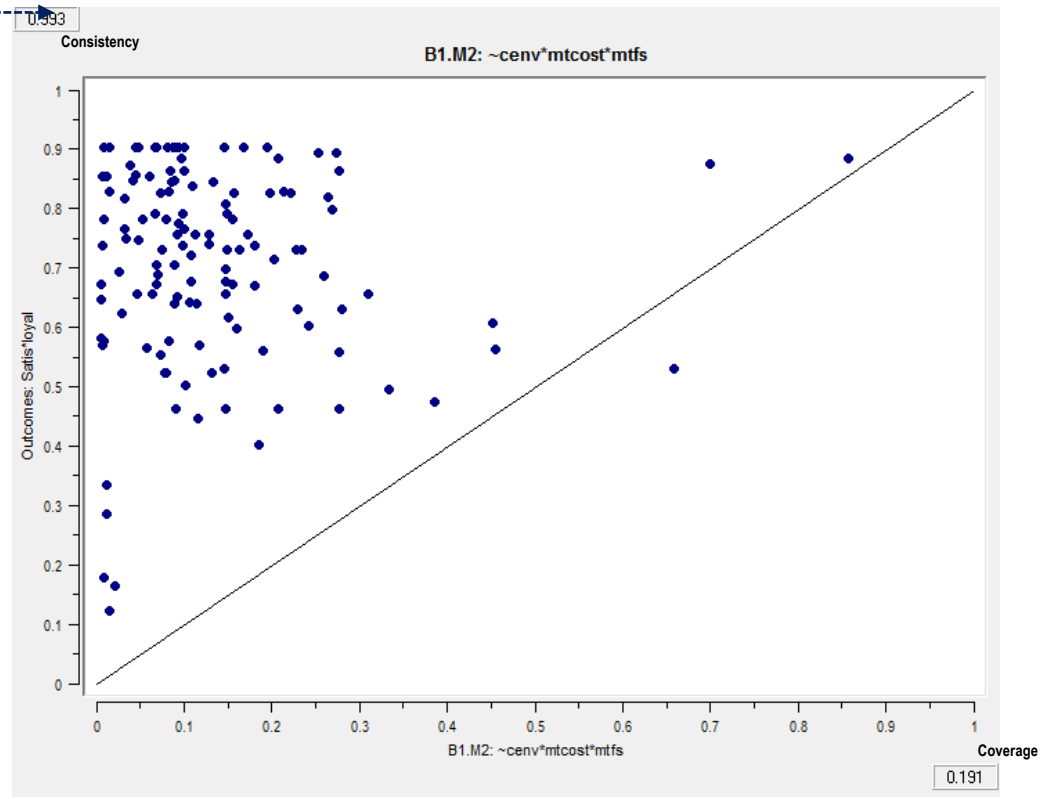
Table 3. Configural models outcomes and its negation (Models for arrows A and B)

Models for predicting high score of outcomes (*outcomes*)	RC	UC	C	Models for predicting the negation of outcomes (*~outcomes*)	RC	UC	C
A1: *outcomes = f(age, gender, edu, inc, len)*[a]				**A2**: *~outcomes = f(age, gender, edu, inc, len)*			
M1. gender*~edu*~len	.409	.018	.887	*M1*. gender*~edu*~inc*~len	.516	.044	.700
M2. ~age*gender*~inc	.446	.142	.958	*M2*. ~age*gender*~edu*~len	.641	.169	.716
M3. gender*inc*~len	.515	.114	.938	*Solution coverage: .686*			
Solution coverage: .727				*Solution consistency: .676*			
Solution consistency:.909							
B1*: outcomes = f(cenv, tdest, mtcost, mtfs)*				**B2**: ~outcomes = f(cenv, tdest, mtcost, mtfs)			
M1. tdest*mtfs	.961	.686	.840	*M1*. ~cenv*tdest*mtfs	.419	.419	.847
M2. ~cenv*mtcost*mtfs	.805	.025	.900	*Solution coverage: .419*			
Solution coverage: .987				*Solution consistency: .841*			
Solution consistency: .837							



Note: M stands for Model, RC: Raw Coverage, UC: Unique Coverage, and C: Consistency, edu: education, inc: income level, len: length of stay, cenv: contry environment, tdest: tourism destination, mtcost: medical tourism costs, mtfs: facility and services. Gender is dummy variables: 0 used for 'men', while 1 used for 'women'. [a]: Cutoffs for frequency and consistency measures are 2 and .8, respectively.

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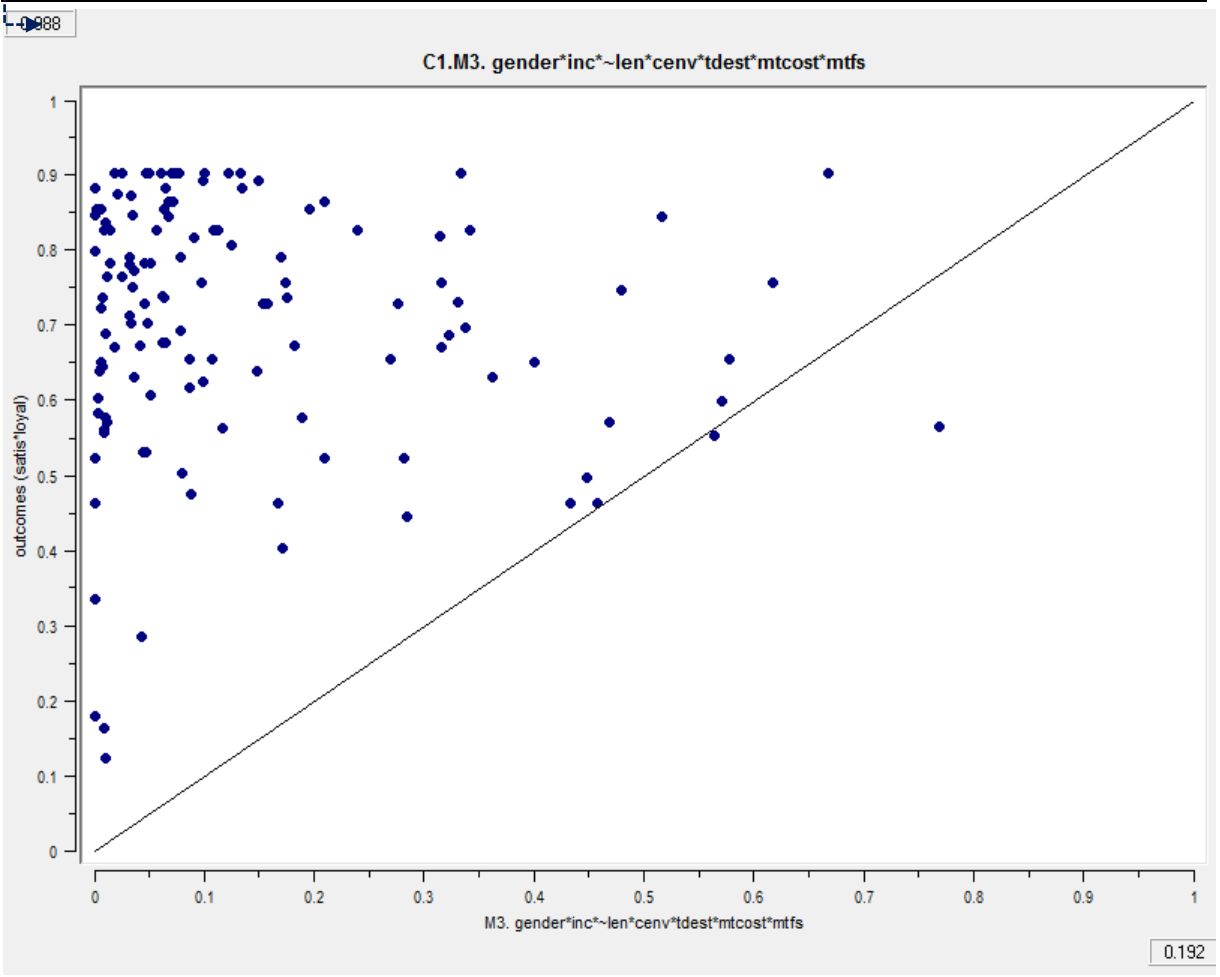
Table 4. Casual recipes outcomes (satis*BI) and its negation with all antecedents (C)

Models for predicting high score of outcomes (C1) and the negation of outcomes (C2)	Raw coverage	Unique coverage	Consistency
C1: *outcomes = f(age, gender, edu, inc, len, cenv, tdest, mtcost, mtfs)*			
M1. gender*~edu*~len*cenv*tdest*mtcost*mtfs	.356	.014	.943
M2. ~age*gender*~inc*cenv*tdest*mtcost*mtfs	.362	.053	.983
M3. gender*inc*~len*cenv*tdest*mtcost*mtfs	.436	.021	.971
M4. ~age*gender*edu*~inc*~len*cenv*tdest*mtfs	.317	.058	.972
M5. ~age*gender*edu*inc*~len*~cenv*~tdest*mtcost*mtfs	.316	.008	.996
Solution coverage: .673 *Solution consistency: .949*			
C2: *~outcomes = f(age, gender, edu, inc, len, cenv, tdest, mtcost, mtfs)*			
M1. ~age*gender*edu*~inc*~len*~cenv*~tdest*mtcost*mtfs	.303	.303	.894
Solution coverage: .303 *Solution consistency: .894*			



Note: M stands for Model, edu: education, inc: income level, len: length of stay, cenv: country environment, tdest: tourism destination, mtcost: medical tourism costs, mtfs: facility and services, satis: satisfaction, and BI: behavioural intention.

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Table 5. Results of necessary conditions analysis

Antecedent condition	Outcome condition (satisfaction and desired behavioural intentions)	
	Consistency	Coverage
Country environment	.912	.859
Tourism destination	.961	.815
Medical tourism costs	.809	.889
Facility and services	.997	.808

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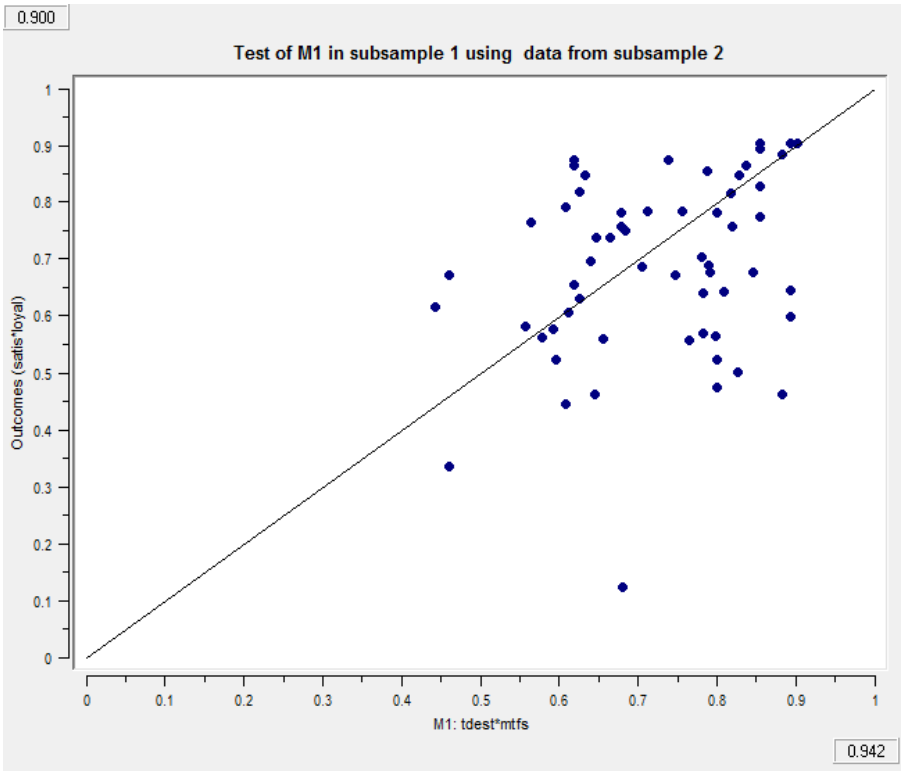
Table 6. Results of predictive validity

Models from subsample 1	Raw coverage	Unique coverage	Consistency
Subsample 1: *outcomes = f(cenv, tdest, mtcost, mtfs)*			
M1. tdest*mtfs	.945	.675	.833
M2. ~cenv*mtcost*mtfs	.297	.027	.978
Solution coverage: .972			
Solution consistency: .836			



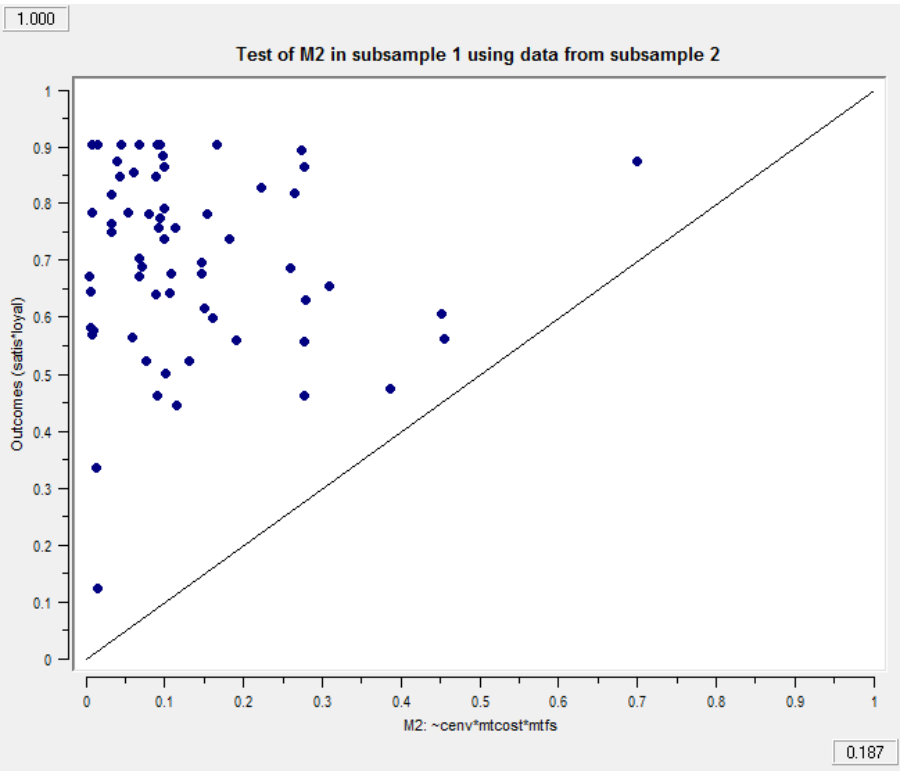


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Table 7. Evaluation of fsQCA results with key tenets of complexity theory

No.	Tenet*	Supporting evidence
1	Tenet 1: A simple antecedent condition may be necessary, but a simple antecedent condition is rarely sufficient for predicting high or low scores in an outcome condition.	Medical facilities and service is a necessary antecedent, but is not a sufficient condition for obtaining high/low outcome scores (see Table 3. A1 and A2).
2	Tenet 2: *The recipe principle*: A complex antecedent condition of two or more simple conditions is sufficient for a consistently high score in an outcome condition.	As shown in Table 3 (B1), two antecedents in Model 1 (tdest*mtfs) and three antecedents in Model 3 (~cenv*mtcost*mtfs) offer a sufficient and consistent condition for simulating high outcome scores.
3	Tenet 3: *The equifinality principle*: A model that is sufficient is not necessary for an outcome having a high score to occur.	Model 1 (Table 3: B1) is a sufficient, but not necessary, model for achieving a high outcome score; alternatively, Model 2 (Table 3: B1) also explains causal conditions for high outcome scores. The asymmetric sufficient but not necessary relationship of Model 2 and outcome is depicted in the fuzzy XY plot at the bottom of Table 3.
4	Tenet 4: *The causal asymmetry*: Recipes indicating a second outcome (e.g., rejection) are unique and not the mirror opposites of recipes of a different outcome (e.g., acceptance) principle.	As shown in Model 1 (~cenv*tdest*mtfs) of B2 (Table 3), the causal recipes for simulating outcome negation is not simply a mirror of Models 1 and 2 of B1 that are causal recipes for high outcome scores.
5	Tenet 5: An individual feature (attribute or action) in a recipe can contribute positively or negatively to a specific outcome depending on the presence or absence of the other ingredients in the recipes.	The causal recipes of C1 in Table 4 provide supporting evidence for this tenet. For example, country environment acts both positively (Model 1-3) and negatively (Model 5) in predicting high outcome scores. There is other evidence (e.g., tourism destination, income level) in models of C1 to support this tenet (Table 4).
6	Tenet 6: For high Y scores, a given recipe is relevant for some but not all cases; coverage is less than 1.00 for any one recipe.	As clearly demonstrated in the XY plots in Tables 3 and 4, coverage for the causal models is less than 1.00.

Note: * source of tenets (Woodside, 2014, p. 2497–2500).

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Appendix A1.

Table I. Results of exploratory factor analysis and descriptive statistics of scale items

Items of constructs	Label	λ	Variance (%)	M	StD
Behvioural intentions (Han & Hyun, 2015)			5.259		
I will recommend Cyprus to others for medical services.	L2	.666		5.738	1.091
I will consider Cyprus when I need medical services in future.	L1	.696		5.481	1.324
Even if the prices of medical services are increased, I will still recommend this place.	L3	.586		5.388	1.377
Satisfaction (Han & Hyun, 2015)			7.140		
My overall perception of medical service quality is satisfactory.	S1	.674		5.275	1.504
Cyprus' medical tourism offering is the same as its promise.	S2	.807		5.250	1.431
I feel that the overall performance of medical tourism in Cyprus is satisfactory.	S3	.753		5.438	1.345
The medical tourism performance in Cyprus has met my expectations.	S4	.664		5.554	1.252
My satisfaction level with Cyprus as a destination for medical tourism is quite close to my ideal.	S5	.785		5.500	1.300
Country environment (Fetscherin & Stephano, 2016)			10.288		
Cyprus has low corruption.	CE1	.673		4.546	1.500
It is convenient to travel to Cyprus.	CE2	.692		4.792	1.539
Cyprus is culturally similar to my country.	CE3	.830		4.954	1.613
Cyprus has an overall positive country image.	CE4	.748		5.116	1.664
The economy in Cyprus is stable.	CE5	.519		4.165	1.674
Cyprus has a language similar to mine.	CE6	.615		4.357	2.319
Travelling to Cyprus is safe.	CE7	.812		5.434	1.769
Tourism Destination (Fetscherin & Stephano, 2016)			9.096		
Cyprus has many cultural or natural attractions/sites.	TD1	.719		5.169	1.561
Weather conditions in Cyprus are excellent.	TD2	.775		5.861	1.385
Cyprus is an attractive tourist destination.	TD3	.921		5.615	1.465
Cyprus is a popular tourist destination.	TD4	.934		5.636	1.358
Medical Tourism Costs (Fetscherin & Stephano, 2016)			8.905		
The travelling costs to Cyprus are low.	MC1	.787		4.225	1.911
Cyprus has low accommodation costs.	MC2	.869		4.109	1.938
Cyprus has low treatment costs.	MC3	.927		4.101	1.924
Cyprus has low healthcare costs.	MC4	.901		4.380	1.934
Facility & Services (Fetscherin & Stephano, 2016)			24.058		
Cyprus has quality treatments and medical materials.	FS1	.673		5.359	1.310
Cyprus has hospital/medical facilities with high standards.	FS2	.710		5.516	1.447
Cyprus has highly-experienced doctors.	FS3	.713		5.814	1.133
Cyprus has well-trained doctors.	FS4	.758		5.969	1.092
Cyprus has reputable doctors.	FS5	.768		5.961	1.052
Cyprus has internationally certified staff and doctors.	FS6	.723		6.000	1.004
Cyprus has hospital/medical facilities with good healthcare indicators.	FS7	.814		5.806	1.100
Cyprus has doctors I would recommend to my family or friends.	FS8	.723		5.977	1.067
Cyprus has reputable hospitals/medical facilities.	FS9	.750		5.772	1.136
Cyprus has friendly staff and doctors.	FS10	.634		6.000	1.034
Cyprus has an overall positive medical tourism image.	FS11	.678		5.783	1.201
Cyprus is known for state-of-the-art medical equipment.	FS12	.629		5.547	1.263
Cyprus has internationally accredited hospitals/medical facilities.	FS13	.754		5.602	1.260
Cyprus has internationally educated doctors.	FS14	.747		5.822	1.151
Cyprus has hospitals/medical facilities I would recommend.	FS15	.794		5.806	1.264
Cyprus offers high quality in healthcare.	FS16	.776		5.890	1.101

Cyprus has internationally certified doctors.	FS17	.673	5.938	1.025

Note: λ is factor loading coefficient. Items were measured by seven Likert scale ranging from 1: strongly disagree to 7: strongly agree. M stands for mean, StD is standard deviation. Kaiser-Meyer-Olkin (KMO) measure with .856 and Bartlett's test of Sphericity of 3960.183 was significant (P<.001). The sources of the scale items are presented in parenthesis.

Table II: profile of the respondents

Gender	*N*	*%*	*Age*	*N*	*%*
Men	50	38.46	Below 26	6	4.62
Women	80	61.54	26-35	47	36.15
Total	130	100	36-45	58	44.62
			46-55	13	10.00
Education level			56 or above	6	4.62
had not completed high school	13	10.00	Total	130	100
high school diplomas	29	22.31			
two-year college degrees	25	19.23	*Income level*		
bachelor degrees	48	36.92	$19,999 or less	15	11.54
postgraduate degrees	15	11.54	$20,000 - $39,999	65	50.00
Total	130	100	$40,000 - $49,999	38	29.23
			$50,000 - $59,999	7	5.38
Length of stay			$60,000 or more	5	3.85
1 week	52	40.00	Total	130	100
2 weeks	63	48.46			
1 month	12	9.23			
2 months	2	1.54			
3 months or more	1	0.77			
Total	130	100			

Note: N represents frequency.

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Table III. Results of the Heterotrait-Monotrait Ratio (HTMT) for discriminate validity

HTMT	Medical tourism costs	Tourism destination	Tourism destination	Facility and services	Desired behavioural intentions
Tourism destination	.227				
Tourism destination	.112	.432			
Facility and services	.243	.287	.289		
Desired behavioural intentions	.210	.396	.207	.627	
Satisfaction	.292	.338	.199	.547	.839

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Table IV: Results of correlation analysis

Factor	1	2	3	4	5	6
1. Country environment	1.000					
2. Tourism destination	.371**	1.000				
3. Medical tourism costs	.161	.090	1.000			
4. Facility and services	.241*	.267**	.232**	1.000		
5. Satisfaction	.291**	.180*	.259**	.494**	1.000	
6. Desired behavioural intentions	.321**	.166	.180*	.541**	.699**	1.000

Note: **: Correlation is significant at the 0.01 level (2-tailed), *: Correlation is significant at the 0.05 level (2-tailed).