

**SUPPLY CHAIN MANAGEMENT IN THE MEDICAL TOURISM  
NETWORKING SYSTEM: A REVIEW**

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**ABSTRACT**

The science development in the medicine field, brings the new methods and systems for health care and medical treatment, and also brings the convenience in transportation and communication. Accordingly, a new field of tourism emerges, that is the medical tourism. Medical tourism is an emerging tourism trend that has recently gained increasing popularity. The idea of medical tourism is that when individuals travel abroad to seek for medical services while at the same time have the intention of healing and relaxation. In practice, this particular field involves many stakeholders that collaborate each other to serve the customer. Consequently, the medical tourism industry depends mainly on the networking system. For that reason, one of the most beneficial management methods for coordinating and integrating these relevant parties in this particular field is through Supply Chain Management (SCM) in that SCM covers the management of numerous activities multiple role-players from various divisional functions and organizations. Accordingly, this paper aims to explore the system that supports medical tourism, particularly by searching the literature and sources of information related to this particular field. Several selected studies suggested a medical tourism supply chain conceptual model to develop better understanding of medical tourism system as a whole.

**Keywords:** Medical Tourism, Medical Tourism Information System, Supply Chain Management, Medical Tourism Supply Chain

**INTRODUCTION**

Science has been growing. In the medicine field, the new techniques as well as technologies of healthcare and treatment, availability of transportations and communication tools, develop a new field in tourism, that is medical tourism. The idea of health tourism, or medical tourism, is not a new one, and is generally thought to have been introduced sometime in the 80's. Medical tourism is where individuals come to a certain country to undergo certain medical procedures and staying a while afterwards to recuperate (Tyan et al., 2021). What usually happens is immediate family members follow to give moral support to the patient and take advantage of the tourist spots that are readily available in the country. In Asia, some countries are now being labelled as the world's top health tourism destinations, such as Malaysia, Singapore, Thailand, and South Korea. However, Indonesia is not included in the

list. Particularly in Southeast Asia, Malaysia, Thailand, and Singapore, are taking leading roles as providers of medical treatment. With government healthcare promotion support, internationally accredited facilities and staff, and high standards of care, these three countries are positioning themselves as medical tourism hubs.

Furthermore, traveling to other countries has become increasingly easier for those who have increasing purchasing power, especially when there is a lack of specialized medical services or quality treatment at home. Taking into account the plane ticket (thanks to the low-cost airlines that are engaged in a fierce battle for market share), the accommodation cost, shopping and all the other things that tourists need to pay for when visiting these three nations, adding up to the cost of having medical attention over there, it will still be cheaper than the cost of having the medical attention back at home.

Yudiyanto added that based on data released by the Indonesia Services Dialog (ISD), every year Indonesians spend at least IDR 100 trillion to get health services abroad. According to him, from the same survey, the number of Indonesians seeking treatment abroad has increased by almost 100% over the last 10 years. If in 2006 there were 350 thousand patients, in 2015 it jumped to 600 thousand patients (Handayani, 2020). For those who follow Indonesian media may be aware that many Indonesian celebrities, businessmen, and even politicians, travel abroad either for getting medical treatment or having routine checkups.

By the above illustration, it can be said that the medical tourism involves many stakeholders, including healthcare providers, government agencies, insurance agencies, and so forth, that are connected each other. Particularly, the stakeholders that involve in medical tourism industry are represented in below figure, based on a study by (Kamassi et al., 2020).

As mentioned before, medical tourism combines finding healthcare abroad and getting recreational care at the same time. Figure 1 shows that the medical tourism industry depends mainly on the networking system which can be seen in the connectedness among the relevant stakeholders. The medical tourism agencies or tourism facilitators provide trip coordination responsibilities for the travelers (airline, accommodation, hospital, etc), health-care providers provide the best offer that suits medical tourists' needs, the government can promote medical tourism through different mechanisms and strategies such as formulation of a strategic plan and the partnership of government agencies and private hospitals, investing in infrastructure development such as airports, roads, transportation and communication, etc. To improve patients' trust, hospital accreditation and health-care employees credentialing as a marketing strategy is the key to medical tourists' positive perceptions of visiting medical tourism destinations. Then, the rise in the number of insurance providers can offer medical travel insurance (Kamassi et al., 2020). For that reason, excellent coordination considers to be essential for establishing competitive advantage and decision-making regarding medical tourism industry (Fongtanakit et al., 2019). This paper will then describe the concept and the architecture of the system that supports this particular field, which can give better understanding of medical tourism system as a whole.

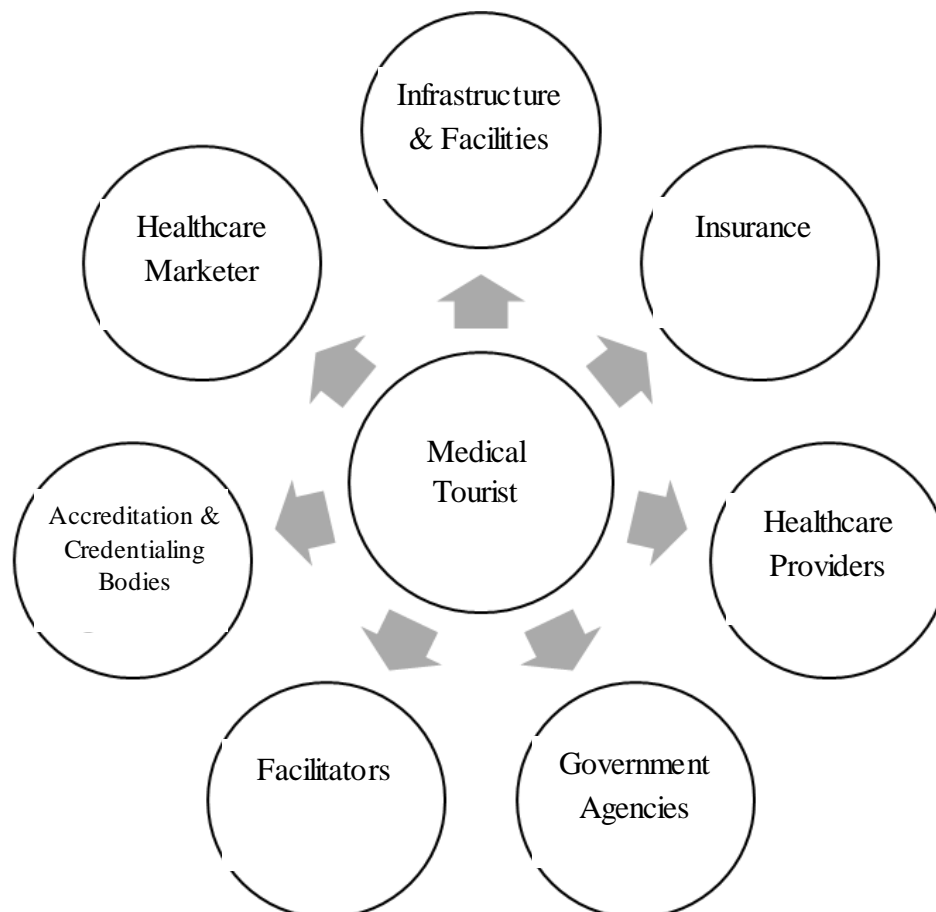


Figure 1. Stakeholders in medical tourism industry.

## LITERATURE REVIEW

Medical tourism is the practice of traveling abroad in order to receive medical care. Specifically, medical tourism is a practice of travelling to countries offering competitive advantage of world class treatment at low cost regarding wellness and health related treatment. In a simple word, medical tourism enables the patients to choose medically superior countries for treatment. The most popular treatments for medical tourists include cosmetic surgery, dentistry, cardiovascular, orthopedics, cancer treatments, weight loss treatments, general tests and health checkups (Bagga et al., 2020). Another study by Lunt et al. (2016) explained that medical tourism is a particular form of patient mobility, where patients travel across borders or to overseas destination to receive treatments including cosmetic surgery, dental surgery, cardio, orthopaedic, bariatric surgery, IVF (fertility), as well as organ and tissue transplantation.

A recent study by Tyan et al. (2021) highlighted some crucial motivational factors that lead people's decision to seek medical treatment overseas, among the factors are lower cost, quality, reduced waiting time, availability and accessibility, as well as regulation. This was also consistent with the study by Bagga et al. (2020) who revealed various factors while selecting their preferred medical tourism destination. Those factors are low cost of medical expenditures, state-of-the-art medical equipment's, dual service of medical treatment plus tourism (vacation) and medical ecosystem of the host country. For instance, Indonesian

patient travel to Thailand to undergo cosmetic surgery. The medical services provided over there may be cheaper than the services available in the home country (Indonesia).

Medical tourism is a thriving industry. Many destinations now seek to attract more medical tourists. As mentioned earlier, Thailand, Singapore and Malaysia are among ASEAN's key players in medical tourism, and Indonesia is one of the top contributors as foreign medical tourists in these three countries. Thailand is well-known for stem-cell therapy, cosmetic surgery, and sex change surgery. Malaysia is well-known for cardiac surgery, just as good as Singapore. In addition, Singapore is also globally well-known for neurological surgery, liver transplants and cancer treatment (Wallibhodome et al., 2019). The United Arab Emirates (UAE) is no exception, even though medical tourism in the UAE is still developing and facing many key barriers to medical tourism development like high costs of medical tourism services, lack of marketing activities, lack of collaboration between medical and tourism service providers, and so on (Bulatovic & Iankova, 2021).

Since medical tourism is an important sector and business for the tourism industry, that means it is needed to enhance Supply Chain (SC) operations to outperform competitors and for achieving competitive advantage among countries which provide this particular field of tourism. Tourism SC (TSC) which was derived from SCM, presented an interdisciplinary area, that is medical tourism SC (MTSC), as we discuss later in the following section (Fongtanakit et al., 2019). In line with that, literature study used in this paper is a previous study that discusses regarding the system that supports medical tourism system. As mentioned earlier, this particular field involves multiple parties, including providers of medical services, insurance, website, travel agents, etc. For that reason, the medical tourism industry depends mainly on the networking system, and it needs to be explained further about the related networking system. Hence, below are four previous papers selected by the author in obtaining relevant information, namely:

- a. Medical Tourism Information Support System (Savchuk et al., 2019).
- b. The Antecedents and Outcomes of the Medical Tourism Supply Chain (Lee & Fernando, 2015).
- c. A Conceptual Model of Medical Tourism Service Supply Chain (Karadayi Usta & SerdarAsan, 2020).
- d. Medical Tourism, Medical Hub and Thailand 4.0 (Gozzoli, 2022).

## **METHOD**

This paper was carried out by examining the literature and online sources related to the topic of the paper (in this case medical tourism networking system) for later analysis. The main objective of this literature search is to get appropriate information, and then finding out the concept of medical tourism industry and the system that supports this particular field.

- a. Gathering sources of information through the books, the internet, findings from prior studies, and other materials associated to the topic.
- b. Reading the gathered sources.
- c. Identifying the information if it is relevant to the topic.
- d. Summing up the key points of each of the relevant literature
- e. Writing down and reorganize the important points that have been obtained in a structured manner into a paper.

## RESULT AND DISCUSSION

The results of the studies generally show the big picture of the system that supports medical tourism. Research conducted by Savchuk et al. (2019) developed Medical Tourist Assistant (MTA), a new model with decision support capabilities to assist medical tourism customers once arranging medical journeys, considering selecting a medical center, specialist doctors, organizing contact with the doctors, translation, etc. The medical tourist trip planning process consist of these features:

- a. Preparing the process of the treatment
- b. Scheduling the trip
- c. The trip itself
- d. Analysing the result of the travel

Before going on a healthcare trip, the first thing to do that is recommended to the patient is to see doctors at home to know what illness he has, or, at least, having consultation of what kind of specialist he needs. The second thing to be solved is determining the destination of the medical trip, and this can be done in two ways: finding a doctor and then the medical center where that doctor works in, or the other way around. The next problem to be solved is how to arrange the schedule to consult and communicate between the patient and the medical center/the doctor. While solving these problems, the patient should put in mind the treatment price as well as the price of entire trip.

After the patient solves the above matters and agrees to the terms and conditions that apply, he/she has to settle other problems like where to stay, how to get there, and how to have a communication when in a foreign country (this is important especially if there is language barrier). Even the trip is over, if needed, the patient should arrange the treatment and rehabilitation process at home. In order to describe the process, Savchuk et al. (2019) showed the construction of medical tourist system as shown on below figure.

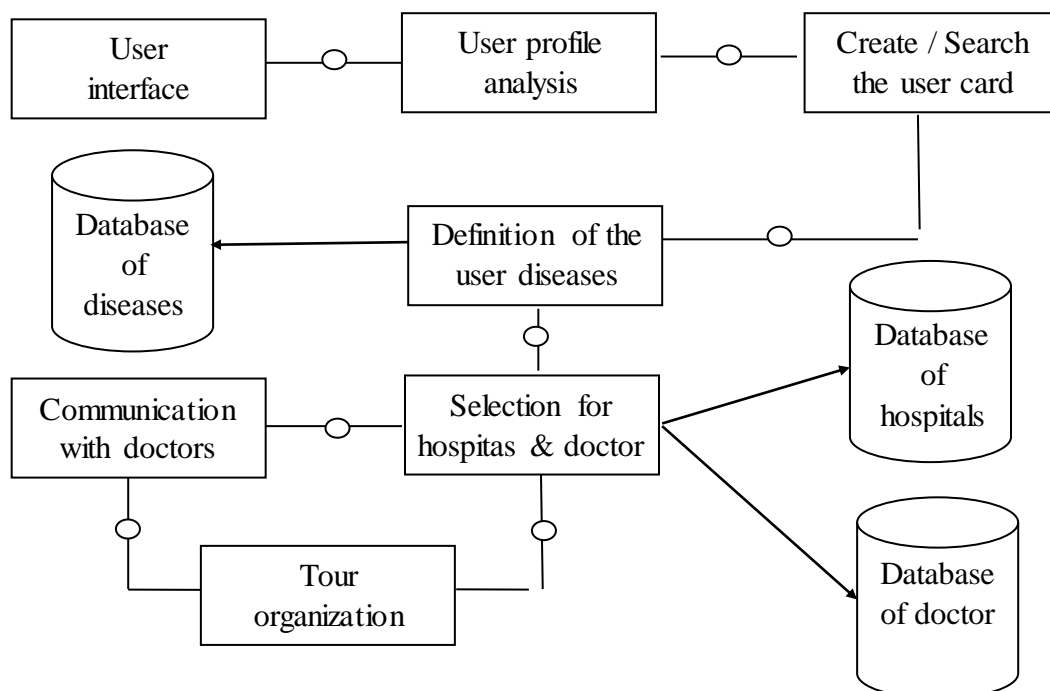


Figure 2. Architecture of the system (source: Savchuk et al. (2019), reprocessed by the author).

The above figure shows the concept model of the system that support medical tourism. There are several interdependence components that support medical tourism system, they are user interface, user profile analysis, definition of the user disease, selection of hospitals and doctors, communication with doctors and tour organization.

- a. User interface - providing communication amongst the system and the user.
- b. User profile analysis - forming the main indications of the user's disease.
- c. Create / search the user card - creating the profile of the user (if the data is not available) or looking for a current one.
- d. Definition of the user disease - searching for probable coincidence of the user indications with existing data of known diseases in the database of diseases.
- e. Communication with doctors - providing the chance to connect with the selected specialist and be explained about the diagnosis and the treatment details.
- f. Selection of hospitals and doctors - using the databases of available medical institutions and specialists.
- g. Tour agencies - gives the chance to select the best trip based on the needs of the users.

To sum up, selection of the medical trip is realized through three phases: exploring the disease, looking for available specialists and tour agencies. The medical recommendation to the user/patient is based on the subsequent facts: information about the patient's indications, processing this info, creating / searching the patient's medical card, searching for the coincidence of the indications with the signs of disease, then selecting the best option for the patient's treatment.

As the above idea, the phases in medical tourism include service that involves multiple parties which are connected each other through network. For that reason, one of the most beneficial management methods for coordinating and integrating related parties in this particular field is Supply Chain Management (SCM) (Du Toit & Vlok, 2014). According to research from Lee & Fernando (2015), they found a model for the medical tourism supply chain. Derived from SCM, Tourism Supply Chain (TSC) has a special subcategory that includes medical institutions, accommodation providers, transportation, insurance, medicine and medical suppliers, that is called Medical Tourism Supply Chain (MTSC). The research then presented an overview of MTSC to describe medical tourism service flow. As mentioned before, SCM has inspired the use of TSC, where TSC itself consists of a series of transportation suppliers, travel agencies, entertainment providers, souvenir outlets, public sectors, and so on, which supply goods and services for the tourists. MTSC has the structure that is as complex as TSC and also similar to all other supply chains. With respect to medical tourism and supply chains, the MTSC can be defined as a supply chain made up of various members of the medical tourism industry who work together to provide a complete medical and holiday service to the patient/user, thereby serving health-care communities, lowering supply chain costs, and increasing supplier efficiencies.

Another perspective from Ferrer & Medhekar (2012) insisted that MTSC is a network of various individuals and businesses that plan medical services, supply required resources, offer medical tourism services, and manage information and financial flows between service providers and patients, and it is being impacted by medical cost, privacy, waiting time, and reliability.

MTSC is made up of upstream suppliers who provide medical tourism products and services (e.g., hospitals, airlines, hotels) and downstream suppliers who promote and sell medical tourism products (e.g., intermediaries, travel agencies). Thus, Information Sharing (IS) is needed among these suppliers in the network. When the members begin to share related information on time, the medical tourism industry's performance is facilitated and improved.

Furthermore, a conceptual model of MTSC can be seen in the study of Karadayi Usta & SerdarAsan (2020), which specifies its business processes and provides a better understanding of its nature. In this study, the authors used the term MTSSC instead of MTSC. MTSSC stands for Medical Tourism Service Supply Chain. However, it still has the same meaning. According to the proposed model, medical consulting and travel organizations are kind of different business lines, where the medical services are provided by the assistance company, and all services related to tourism are provided by travel organizations. The proposed model also defines the boundaries of the business processes, i.e. who is responsible for particular business processes in the supply chain. This structure is more common in practice and is widely observed in the market (see Figure 3) below.

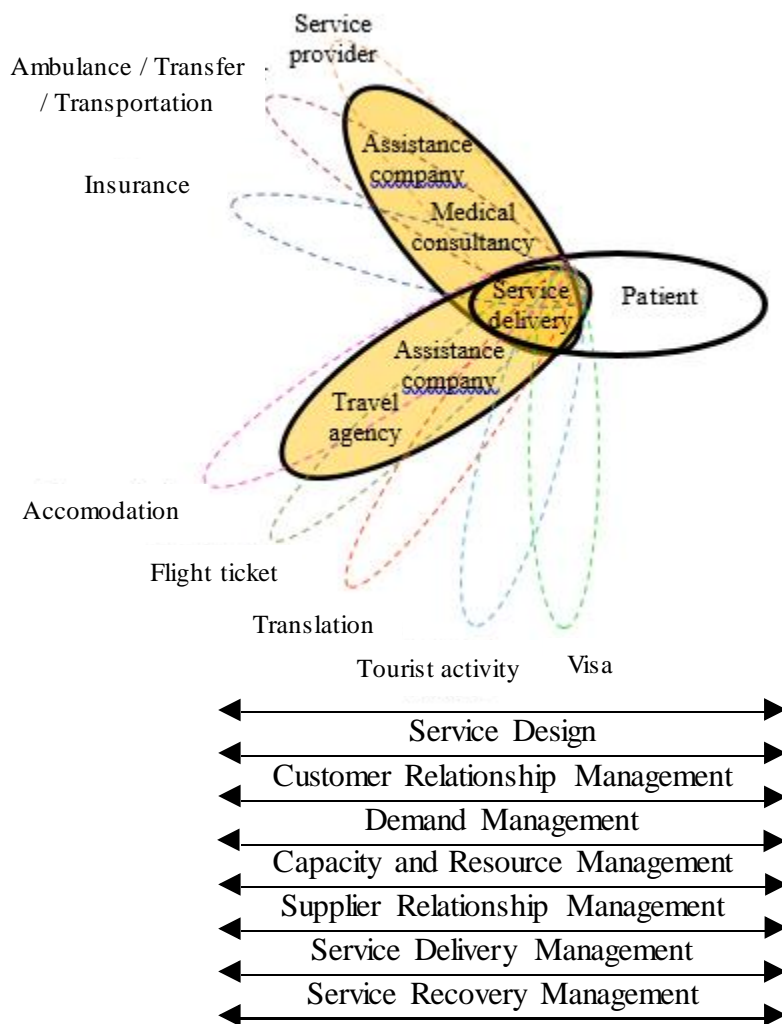


Figure 3. MTSSC model (source: Karadayi Usta & SerdarAsan (2020), reprocessed by the author).

For more details, this conceptual model classifies the business processes of MTSSC, namely:

- a. Service Design (SD): When designing the medical tourism service, patients and their relatives' feedback on medical tourism, treatment, therapy experiences, their demands and expectations about the services, should be considered.
- b. Customer Relationship Management (CRM): In order to meet the needs of medical tourists, social and cultural support must be provided. Furthermore, qualifications (for example, multilingualism) of medical experts and the assistants of the patient should be trained so that the customer experience will improve. Finally, marketing strategies would be successful in generating awareness of medical tourism prospect, and also attract medical travelers to the destined country.
- c. Demand Management (DM): When predicting demand and planning capacity, service characteristics should be taken into account. Collecting data, processing that data, analyzing, and evaluating should be defined clearly and well organized, so that the demand can be managed more effectively.
- d. Capacity and Resource Management (CaRM): This emphasizes the importance of appointment scheduling, matching health professionals to visit slots, setting surgery rooms in a hospital, and concentrating on resource and capacity management for rehabilitation services. To ensure business continuity, good coordination plays an important role in managing activities.
- e. Supplier Relationship Management (SRM): In SRM, the products and services should be guaranteed by the suppliers. Besides, the experts emphasized the significance of SRM because any failure to source at the accurate place and time, as well as any problems in coordinating and communicating with suppliers, leads to customer dissatisfaction towards the service.
- f. Service Delivery Management (SDM): To reassure medical tourists that they are receiving proper care, each stage of the service operation should be informed by medical practitioners to the patients and their family. Patient representatives, in particular, should guide the patients and never treat them as a money-making machine. The major SDM challenge, according to experts, is that business partners' focus remains on "saving the day" rather than improving customer experience by setting strategies and developing some processes.
- g. Service Recovery Management (SReM): The services characteristics and the problems they caused should be considered in service recovery. For example, services are quick, and certain elements of the service experience can only be reviewed after some time has passed. As a result, SReM should consider a longer timescale, specifically for medical services, rather than just immediate service failures.

In addition, a recent study conducted by Gozzoli (2022) illustrated this particular industry's supply chain and its stakeholders' collaboration in Thailand, which can be seen in below figure.



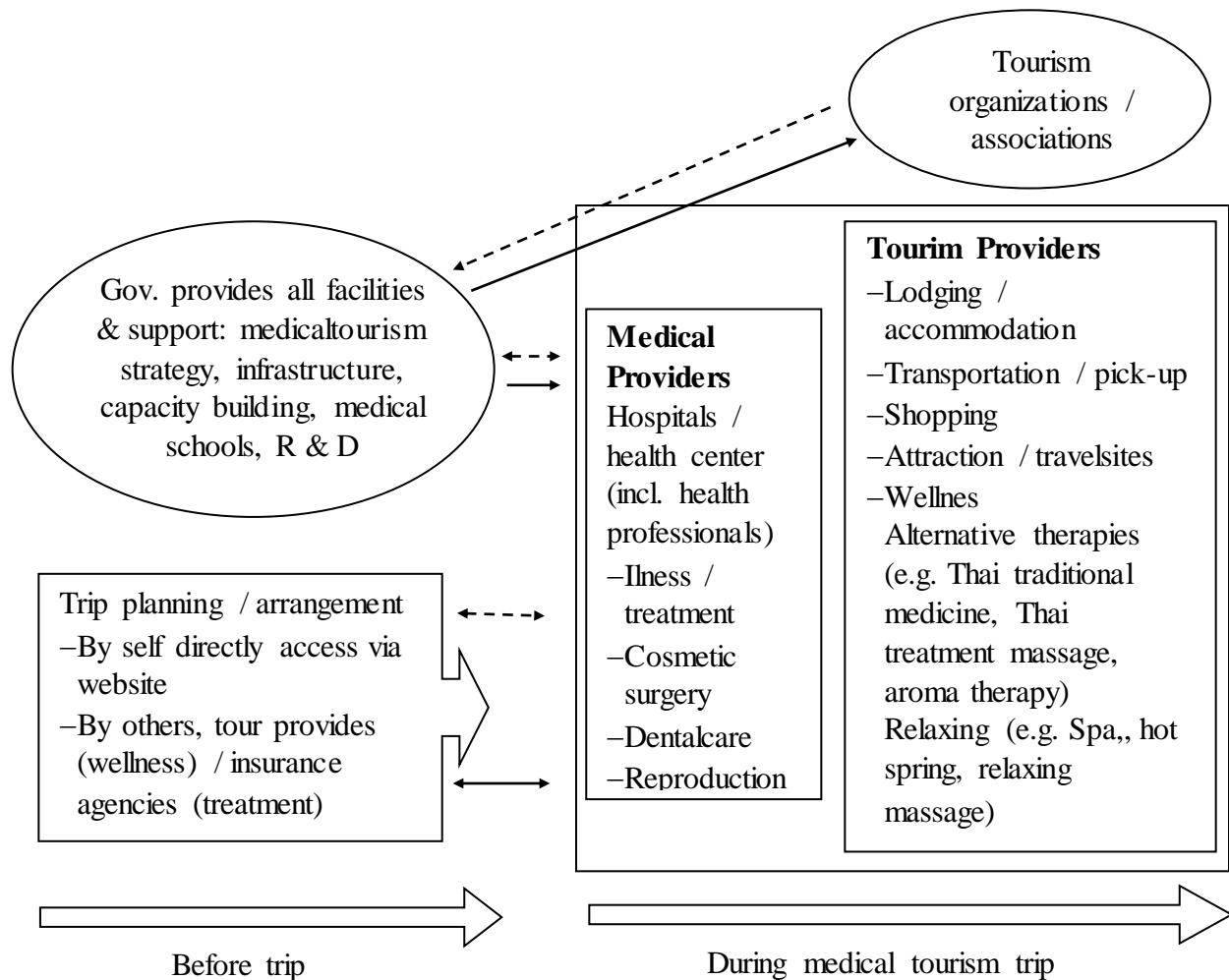


Figure 4. Thailand's Medical Tourism Supply Chain (source: Gozzoli (2022), rearranged by the author).

The medical tourism supply chain is complex and unique. It concerns a large number of suppliers who are not in the manufacturing industry. The end products are as follow:

- Healthcare (health services, medical treatment, accredited hospitals, hygiene)
- Pleasure services (foods, lodging, transportation, shopping areas)
- Nice attraction places (relaxing environment, beautiful sceneries, accessibility, cleanliness).

The chain's outcomes come from many suppliers, and the downstream suppliers can accommodate medical tourists by providing high-quality services. In this regard, good supplier supply chain management can help to build the value chain and improve the efficiency of medical tourism.

As in Figure 4, Thailand's medical tourism supply chain is divided into two parts based on customers' demands and knowledge: before the trip and during the trip. Gozzoli (2022) further explained that the information givers are the stakeholders in the upstream "before the trip" supply chain, while the healthcare tour organizers are the stakeholders in the downstream "before the trip" supply chain. To illustrate, when the patients book a medical package by their own, including hospitals, hotels, airlines, and land transportation, the downstream supply chain is travel agencies that arrange all travelling necessities. However,

when the patients book a medical package through medical tour providers or insurance agencies, the downstream supply chain is tour providers or insurance agencies. The upstream (end) of the chain includes services, information between medical suppliers, and exchanges of products, whereas the downstream (end) of the chain includes tour providers, finances, flows of services, and information from hospitals to customers (Kaewkitipong, 2018).

People who travel in the aim of getting medical care will look for the related information as much as they can with the help of internet and by other means like through magazines, news, travelling companies, tourism promotion agencies, as well as “word of mouth” from their relatives or friends. Because of that, information plays a significant role as in the decision making as the medical trips need to be a “value for money” package for the patients. Therefore, digital technology is a major tool for marketing and information distribution. Customers and suppliers can both get and provide reliable and critical messages if the information well flows. What is more, hospital accreditation and the medical destination's sound political and economic status also play an important role in decision making in this stage.

During the trip, there are many other stakeholders in the supply chain, from health service providers to travel agents, from the policymakers to the implementing agencies. Each activity affects the chain's upstream. For instance, in the case of cosmetic surgery, if the trip is arranged for relaxing, the upstream of the chain may be the clinic/hospital, the middle stream is the doctor and nurse who conduct the treatment, while the downstream may be the travel agents. Medical tourism policy guidelines are another example. The upstream of the chain is the government (e.g. the national committee for the medical hub), while the downstream of the chain is the Ministry of Public Health and tourism association, who conduct the action plan and promote medical tourism, respectively.

## **CONCLUSION (S) AND RECOMMENDATION (S)**

The medical tourism has emerged as a new niche within the tourism industry. Some of the factors that contribute to the emergence of this particular field are innovative technologies and skills in destination countries, expensive costs and long waiting lists at home country, reduced transportation costs, as well as internet marketing. This is suitable with the old saying “Travel is the Best Medicine”, given the advance technology in the medical industry as well as the convenience to travel abroad to seek for medical treatment.

Advancing digitalization is needed in all dimensions to help the medical industry. Specifically, digital platforms in medical tourism should be more networking, more innovation, and more efficiency. As a patient, traveling abroad is actually wearisome, especially when traveling not in a good condition and should get medical treatment abroad, there are so many things to take care of. For that reason, patients want a single company that serves holistic services in dealing with necessary things related to health travel and treatment, both. Also, patients need a system that provides a whole detail about the travel organization and health care support at the same time.

For example, a system that provides specialist doctor recommendation facilities, appointments, plane tickets, hotels and tourist attractions. In other words, patients prefer all services that are being managed via a single intermediary, mainly for its convenience. Majority of previous studies selected in this paper proposed a widely observed structure of

medical tourism supply chain in the market, where the medical consulting and travel organization services are different since they are kind of different business line. As of today, there is a growing demand for health tourism services in the tourism industry. For that reason, further studies are needed in MTSC that compare, examine and explore the medical tourism industry in depth, to get better understanding of this particular field since it has a huge potential.

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