原著論文

# A study on factors affecting medical tourists' information retrieval activities

## - Focusing on outbound tourists in Japan and South Korea -

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Abstract　Product information is very important for modern consumers. It is one of the factors that have a great influence on product purchasing. Its influence is particularly strong in the purchase of medical tourism products, and tourism information is a very important factor connected with the repurchase of products and intention of recommendation. Accordingly, elucidating factors affecting the retrieval process of medical tourist information is an important avenue of inquiry in marketing. This study identifies factors that affect information retrieval activities when medical tourists are in the middle of tour. It also examines how these factors affect medical tourism product repurchase. The results of this study are expected to contribute to the development of a tourists' information usage model in the future.

Keywords : Tourist behavior, Information retrieval activity, Medical tourists.

## 1. Introduction

Modern consumers retrieve a lot of information during the purchase process. This information retrieval activity has a direct influence on purchasing decisions. In addition, retrieved information affects not only purchase activity but also evaluation of product satisfaction and intention of repurchase. This process is the same for purchasing medical tourism products. Information about medical tourism products has a great influence on purchase of tourists, satisfaction, and repurchasing intention.

One of the main purposes of retrieving information about tourism products is to avoid anticipated post-purchase risks. There is the high volume of information retrieving activity in modern consumers' purchasing. That means that there are many risks to the purchasing behavior of consumers. Medical tourism products have the following four characteristics. First, the verification of the retrieved tourism

information takes place after the purchase has occurred. Second, it is not a product with a high frequency of contact. Third, the price is high comparatively. Fourth, the involvement in purchasing process is very high due to health issues. According to these features, consumers are more sensitive to risk than with other products. Therefore, it can be considered that tourism information and information retrieving activities in tourism products are very important.

Due to this importance, medical tourists engage in more information retrieving activities than they do in purchase of other products, and there are many ways to retrieve information. This tendency is more prominent in overseas medical tourism products. The scale and proportion of overseas tourism is getting bigger due to that it offers a completely different experience compared to domestic tourism products. However, due to differences in language, law, and culture, there are many restrictions on information retrieving activities in overseas medical tourism products. In addition, the accuracy and sanctity of the retrieved information is more vulnerable for overseas compared to domestic tourism products. Thus, the risk that consumers must take is bigger.

Of course, these risks are being mitigated to some extent by information provision efforts at sightseeing spots and the development of ICT infrastructure for foreign tourists. According to these features of overseas medical tourism products and environmental changes, the information retrieving activity of tourists occurs in all stages of tourism – before, during, and after the trip.

Especially, the information retrieval activity during the trip plays a role in reducing the vulnerability of the information acquired before the trip, and it affects the satisfaction of the tourism product and intention of recommendation as well as repurchase intention. These changes have induced a need to extend the research scope regarding tourism information retrieval. In particular, expanding the scope of research to the during stage of the trip is important for marketing research. This is because this is the stage where tourism activities data can be collected and verified simultaneously.

To extend the scope of research to the during stage of the trip, it is necessary to consider the factors that may influence the information retrieval activity in that stage. Information retrieval at the during stage of the trip is contextually different from information retrieval at other stages. In this study, I derive factors affecting tourists' information retrieving and verification activities in the during stage of the trip.

2.  Meta-analysis

2.1   Tourism Information and Use Intention

"Tourism information" refers to all information that tourists needed for tourist activities. In addition, data types and sources change according to the needs of tourists. Generally, tourism information can be divided into six categories as follows. The first category is general information about tourist areas. This refers to climate information, societal information, economic information, and cultural assets of the

area. The second category is accommodation information. This means the information on the type, location, rating, number of rooms, availability, price, and dining and other facilities of accommodation. The third category is the transportation information. This means information about the type of transportation, cost, available times, and duration. This can be subdivided into two parts. That is, travel to the target area and travel within the target area. The fourth category is the information about restaurants. This means information on famous and/or unique restaurants, and about the style, menu, services, and how to access. The fifth category is information on enjoyable facilities or events. This means information about location, type, cost, and event information. The final category is information about safety and security. Activities of tourism in unfamiliar places are a great pleasure. However, it is very important to ensure a sense of psychological relief so as to enjoy them completely. The information in this category refers to information that confirms the safety of tourism. For example, tourist insurance information, medical facilities information, emergency contact information, location and contact details of embassies, and geographical positioning information.

There are differences between online information and offline information. Online information has the following six features. ① It is easy to update to the latest information (Freshness). ② Transfer of information is simple (Accessibility). ③ It allows two-way communication of information (Interactivity). ④ It is possible to provide various types of information by using multimedia (Abundance). ⑤ Access to relevant information is simple (Ease of use). ⑥ The information structure is massive and deep (Immensity).[1]

As mentioned above, the conceptual scope of information started from simple pieces of information but has expanded widely.　Nowadays, information is understood in terms of structure and the function of data. This trend can be found in the concepts of big-data and deep-learning.

The Samsung Economic Research Institute of Korea has defined big-data as "The collection of data that is difficult to handle [including data from] the organization and technology personnel to management and analysis.[2]" According to this definition, besides the information itself, human resources and organization are essential for handling information.

Deep-learning is defined as a set of machine-learning algorithms to attempt a high level of abstraction using a combination of different non-linear transformation techniques.　Based on these theories, the meaning of information can include pieces of information, technical personnel, and the management of information. This can be applied equally well to tourism information.

Through these features and classifications of tourism information, it can be considered that there are three kinds of intention to use tourism information.

The first is information to support tourism activity itself. This is aimed to satisfy the basic needs of tourism products. The second is information for additional fun. This is aimed at meeting additional needs during trips, and providing tourists with unexpected pleasures. The third is information on safety. This is aimed at obtaining maximum satisfaction by solving the safety problems that may occur in the during stage of the trip. In light of these types, intention of use of tourism information can be a factor

affecting the retrieval of information.

2.2   Tourism information retrieval

   Tourism information retrieval according to the features of the activity can be classified in various ways, as follows: First, information retrieval can be divided into searching and surfing. Searching refers to finding specific features and purchasing with the purpose of information retrieval. Surfing is an ongoing search process seeking simple or general information.

   Pan (2003)[4] divided tourism information retrieval into five steps based on the flow of tourism activities. The five steps of this model are Ongoing Search, Prepurchase Search, Planning Search, En-route Search, and After-trip Search, as presented in Figure 1.
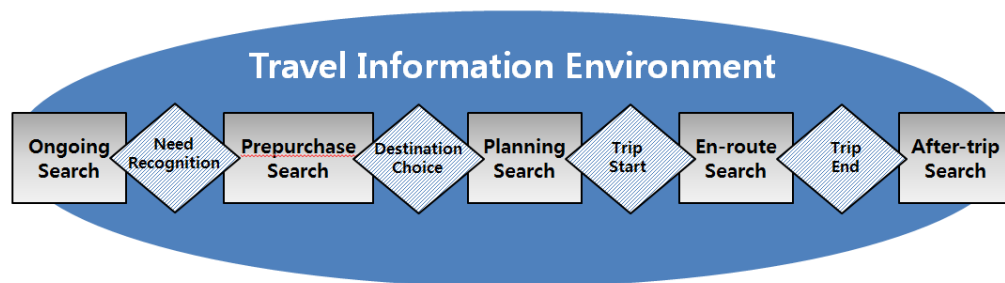


Fig.1. A Process Model of Travel Information Search[5]

   The conventional concept of the tourist information search refers only to the step of Planning Search. However, Pan divided this into two steps: Ongoing Search and Prepurchase Search. He thought of each step as having different features of information search. He also asserted that there is an information search in the After-trip step. He argued that the information search in the En-route Search step and After-trip Search step are particularly important factors determining intention to revisit.

   Another classification criterion of the information search activity is the range of search activities. By this criterion, search activities can be divided into internal search and external search. Internal search is a process of retrieving the necessary information from one's own past experience or knowledge. External search is a process of retrieving the necessary information from outside one's own experience and knowledge. Sources of information in the external search process include books, radio, TV, Internet, and external human resources.

   Finally, there is a criterion of classification about knowledge regarding time flow, which can be divided into knowledge gained before and after the search. Earlier knowledge often has features that affect the later knowledge. Based on these theories, it is determined that previously gained knowledge may be affected by the information search activity in the En-route Search step.

   Therefore, earlier knowledge can be considered as a factor affecting information retrieval activity in the during stage of the trip.

2.3　Infrastructure, Information, and Attitude

Recently, information technology has been changing rapidly. These changes are lowering the barriers between countries. In particular, they have lowered the barriers of communication method and language problem. These two barriers are the greatest to international tourism. However, accessing tourism information from overseas is becoming very convenient, due to changes such as supporting multi-language tourism websites, diversification of internet platforms, support of mobile device, and unified standards for communications technology. Furthermore, this environment is making possible to collect marketing information such as location information, health information, and billing information. Therefore, these changes in technology can promote search activity in the En-route step. Considering this point, the change of infrastructure due to the development of technology, especially the diversification of search methods, can be considered as a factor affecting information retrieval activity in the during stage of the trip.

Another factor that can affect tourism information searching is tourism constraints. The study of tourism constraints covers the restrictions from the selection of tourist sites to tourism activities.

Samdahal & Jekubovich (1997)[6] classified tourism constraints into personal constraints, structural constraints, and interpersonal constraints. Personal constraints and interpersonal constraints are constraints that can occur in relationships with people, and structural constraints are factors such as time, money, and health.

Hinch & Jackson (2000)[7] identified seasonal factors of tourism as tourism constraints.

Pennington-Gray & Kerstetter (2002)[8] studied tourist constraints on tourists of natural tourism products. They classified constraints as inherent constraints (safety, technology, tourism information, etc.), interpersonal constraints (family, friends, trip partners, etc.), and structural constraints (money, time, weather, conditions, road conditions, equipment, etc.).

Similarly, Nyaupane, Morais, & Graefe (2004)[9] classified tourism constraints into structural constraints such as money, time, weather, and places, intrinsic factors included in tourism products, and interpersonal constraints on relationships with people.

Andronikidis, Vassiliadis, Priporas, & Kamenidou (2006)[10] conducted an empirical survey of the factors related to intrinsic constraints, interpersonal constraints, and structural constraints on tourists in Greek ski resorts.

Based on the above research on tourism constraint factors, tourism constraints can be classified into three categories. First is factors that come from the characteristics of tourism products. These factors include safety, technology, travel information, pricing, and so on. The second category is interpersonal factors. These include family, trip partners, tourist guides, and so on. The third category is structural constraints. These include time, place, equipment, and so on. Especially, among the three categories of tourism constraints, structural constraints most directly influence the intention of using information retrieval infrastructure. According to these theories, time, place, and search method can be considered

as factors affecting intention of information retrieval.

2.4    Technology Acceptance Model

There are many theoretical studies on the use of technology and attitude. As a model to explain the behavior of information technology use, Davis (1989)[11] proposed the Technology Acceptance Model (TAM). This theory is a model that extends the Theory of Reasoned Action (TRA) proposed by the Ajen & Fishbein (1967). According to the TRA, there are personal factors and social factors. Personal factors are attitudes toward behavior, and social factors are subjective social norms. These two factors affect the intention of activities and the actual action. Davis asserted that perceived usefulness and perceived ease of use are major factors in information technology. He explained the process of influence. The attitude caused by these factors affects the intention of action, and the intention of action affects the actual behavior.

In addition, according to the research of Bandura (1982)[12], the user of information technology has higher confidence when the ease of use is high level. This confidence makes the attitude toward information technology positive.

Lederer et al. (1998)[13] found that the TAM can be applied to homepage information search. In their study, the perceived ease of use had a positive impact on attitude, on use of the homepage, and behavior in the information search.

We can explain the relationships concerning information search activities by using this model. When searching for information, if usefulness and ease of use are experienced, the information search behavior changes the attitudes of tourists. This changed attitude affects the actual tour activities by altering intention of action.
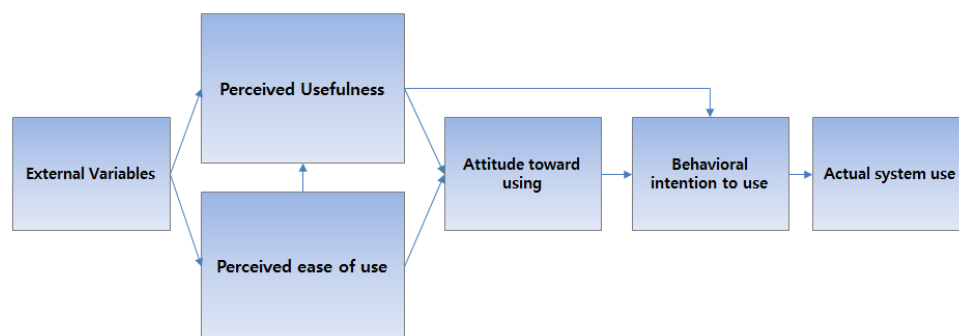


Fig.2. Technology Acceptance Model[14].

2.5    Medical tourism

The definition of medical tourism is as follow: It is a phenomenon that patients go to receive treatment overseas with the belief that there are better quality medical services at a lower price in mother country. This definition is by Medical Tourism Association. There is another definition: In order

for a foreigner to receive medical services in Korea, the patient and their companions carry out medical services and tourism activities in parallel. This definition is by Ministry of Health and Welfare in South Korea. These definitions mean Activity involving international movement to receive better medical service in common.

3　Research Model

The factors affecting the information retrieval activities in the during stage of the trip can be defined as follows. First, we can consider the intention of tourists to use medical tourist information. This is a factor that can be considered from the classification of information, and can be classified into three categories: usefulness, fun, risk avoidance. The second is the environmental factor of medical information retrieval. These factors include time and place, including the physical environment of the medical tourist. The information retrieval methods available is also considered as a factor.

The third factor, earlier knowledge about the medical tourism sites, can be considered as a factor influencing retrieval activity. Earlier knowledge means information that is already available internally or externally to tourists, and can be verified without any additional retrieve activity. It is considered that the factors mentioned above are influential on the search activity through influencing the attitude toward retrieval.

Given the above, the following hypotheses are set here, as indicated by the research model shown in Figure 3:

Hypothesis 1: The time of the medical tourist and search attitude are positively correlated.

Hypothesis 2: The place of the medical tourist and search attitude are positively correlated.

Hypothesis 3: The method of the medical tourist and search attitude are positively correlated.

Hypothesis 4: Usefulness and search attitude are positively correlated.

Hypothesis 5: Fun and search attitude are positively correlated.

Hypothesis 6: Risk-avoidance and search attitude are positively correlated.

Hypothesis 7: Existing knowledge of the medical tourist and search attitude are positively correlated.

Hypothesis 8: Search attitude and search activities are positively correlated.
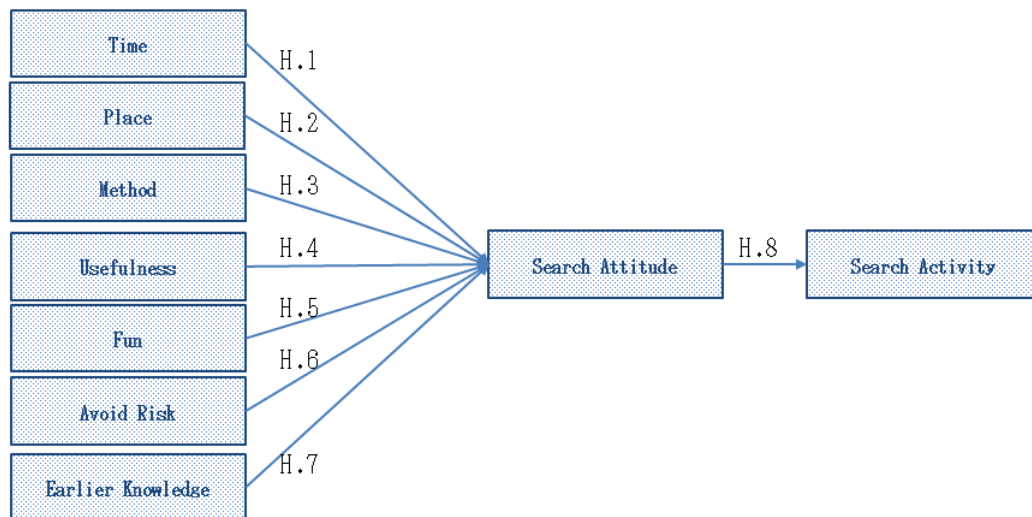
Fig.3. Research Model

## 4  Survey and Results

The survey was conducted in international airport terminals in Japan and South Korea. The survey period was from the 9th of August to 18th of September in 2019. It was conducted on 68 tourists (46 Japanese and 22 Korean). The questionnaire of this survey was designed to address the above hypotheses using Likert-scale items. The correlation analysis was used to examine how each factor is related to each of the others. The analysis software is SPSS 18.

Table1. Hypothesis 1

|  | Time | Search Attitude |
|---|---|---|
| Time | 1 |  |
| Search Attitude | -.025 | 1 |

Table 1 shows the correlation analysis results relating to hypothesis 1. The coefficient of the result is -.025. This means there is no connection between the time factor and search attitude.

Table2. Hypothesis 2

|  | Place | Search Attitude |
|---|---|---|
| Place | 1 |  |
| Search Attitude | -.046 | 1 |

Table 2 shows the correlation analysis results relating to hypothesis 2. The coefficient of the result is -.046. This means there is no connection between the place factor and search attitude.

Table3. Hypothesis 3

|  | Method | Search Attitude |
|---|---|---|
| Method | 1 |  |
| Search Attitude | .819 | 1 |

Table 3 shows the correlation analysis results relating to hypothesis 3. The coefficient of the result is .819. This means there is a very strong connection between the method factor and search attitude.

Table4. Hypothesis 4

|  | Usefulness | Search Attitude |
|---|---|---|
| Usefulness | 1 |  |
| Search Attitude | .731 | 1 |

Table 4 shows the correlation analysis results relating to hypothesis 4. The coefficient of the result is .731. This means there is a strong connection between the usefulness factor and search attitude.

Table5. Hypothesis 5

|  | Fun | Search Attitude |
|---|---|---|
| Fun | 1 |  |
| Search Attitude | .748 | 1 |

Table 5 shows the correlation analysis results relating to hypothesis 5. The coefficient of the result is .748. This means there is a strong connection between the fun factor and search attitude.

Table6. Hypothesis 6

|  | Avoid Risk | Search Attitude |
|---|---|---|
| Avoid Risk | 1 |  |
| Search Attitude | .740 | 1 |

Table 6 shows the correlation analysis results relating to hypothesis 6. The coefficient of the result is .740. This means there is a strong connection between the avoid risk factor and search attitude.

Table7. Hypothesis 7

|  | Earlier Knowledge | Search Attitude |
|---|---|---|
| Earlier Knowledge | 1 |  |
| Search Attitude | .613 | 1 |

Table 7 shows the correlation analysis results relating to hypothesis 7. The coefficient of the result is .613. This means there is a connection between the earlier knowledge factor and search attitude.

Table8. Hypothesis 8

|  | Q11 | Q12 |
|---|---|---|
| Q11 Search Attitude | 1 | |
| Q12 Search Activity | .470 | 1 |

Table 8 shows the correlation analysis results relating to hypothesis 8. The coefficient of the result is .470. This means there is a connection between the search attitude to the search activity.

As the results of analysis indicate, the time factor and the place factor (hypothesis 1 and 2) were found to be non-significant. The other hypotheses are all proven. The results indicate the following conclusions. First, retrieval method of information affects attitude and search activity. Second, purpose of search and earlier knowledge affect attitude toward search. Third, the attitude to the search affects search behavior. The relationship between each factor is shown in Figure 4.
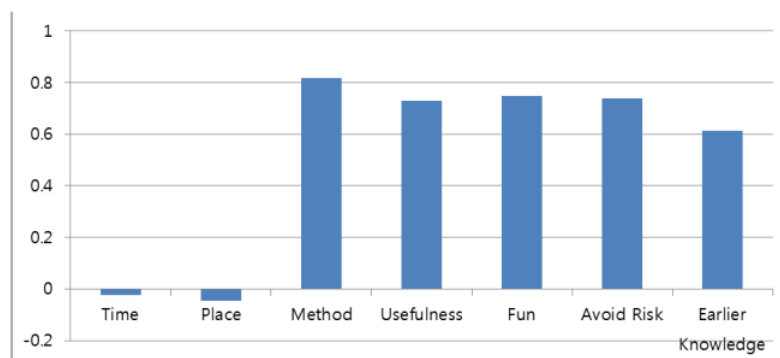


**Fig.4.** Relationship of Factors

As shown in Fig. 4, time factor and place factor are not related to the search attitude. In addition, the method factor was the most influential factor. The three intentions of using information are at almost similar levels. Earlier knowledge has a significant impact, but it is less influential than other factors. The validated model is shown in Figure 5.
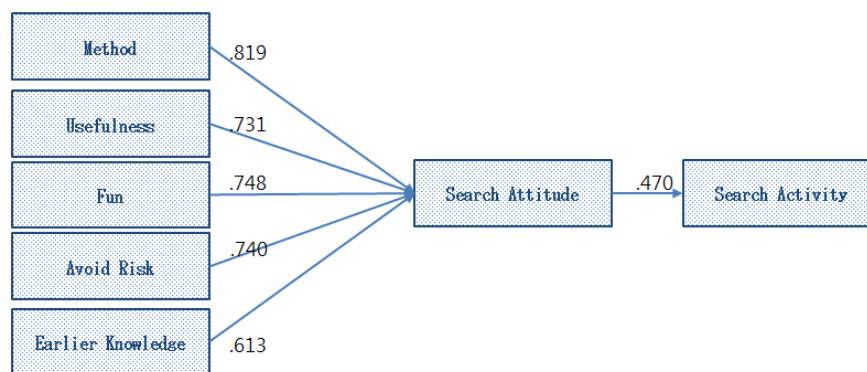
**Fig.5.** Verification Model

## 5　Discussion

Direct implications of this research are as follows: First, we identified a method for increasing search behavior. The actual search behavior of medical tourists is influenced by search method, intention to use tourism information (usefulness, fun, avoid risk), and earlier knowledge. Thus, the provision of means for searching and the structuring of information suited to the purpose of use can change the attitude toward retrieving medical tourism information, and it is possible to increase the medical tourism information retrieval behavior in this way. Second, the direction of information system construction is confirmed. According to results of this research, the intention of using information has a strong influence on information retrieving. Therefore, it is necessary for operators who provide information to tourists to structure information in accordance with this intention.

Conclusions of this research are as follows: First, it can be considered that the information retrieving activity in the en-route step takes place in line with the available information retrieving method and purpose. As the level of technical environment between countries becomes similar, the methods of retrieving medical tourism information in the en-route step will gradually become more diverse. In addition, retrieved information according to this purpose can satisfy the needs of tourists; thus, it will be possible to increase the satisfaction of tourists through information retrieving activities in the en-route step. Next, it will be possible to stimulate the economy of the tourist area by promoting additional purchasing activities during tourism activities. The retrieving of medical tourism information by tourists can affect all purchasing activities that occur in the en-route step. Using the results of this study, it can be deduced that purchasing behavior can be increased if tourists can get information easily. Thus, sellers of tourism products and people in charge of the tourist area should carry out further investigation on the methods of providing tourism information, the needs of tourists, and the purpose of information retrieval in the en-route step.

Through this research, it is possible to establish a model for medical information use in the en-route step. Based on this result, it is possible to integrate this model with other medical tourism activities.

Accordingly, it will be possible to construct a model that can specify the relationship between the provision of tourist information and the satisfaction with medical tourism products. Therefore, it is considered that this study helped elucidate the relationship between the provision of medical tourism information and satisfaction factors. In order to find an active marketing method for tourists who are planning to travel overseas in the future, it is necessary to establish a model for information retrieval and satisfaction in the en-route step of trips. This study can provide the rationale for modeling by identifying the factors affecting tourist information retrieval.

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