CHAPTER I. INTRODUCTION

1.1 Statement of Problem

The tremendous development and wide use of the Internet has changed our lives and the landscape of our society including the tourism industry, which has reached the biggest share of online transaction volume (Werthner & Klein, 1999). Tourism is an information intensive industry (Poon, 1993) in that tourism organizations rely on the exchange of information with travelers through various information channels to market their products and build customer relationships. Travelers, on the other hand, depend on travel-related information to satisfy their various information needs including trip planning (Vogt & Fesenmaier, 1998). Recent studies showed that travelers use different combinations of information sources to plan their trips such as personal experience, friends and families, travel agencies, travel brochures and guides, highway welcome centers, magazines and newspapers, and these different search strategies are influenced by different search contingencies and individual characteristics (Fondness & Murray, 1999).

Computer scientists have built a variety of systems on the Internet to facilitate travel information search. Numerous travel related web sites offer a wide range of services including online booking, virtual tourist communities, and search functions on destinations, accommodations, activities or attractions according to user-defined criteria. Various computer agents also have been developed to facilitate trip planning on the Internet (Linden, Hanks & Lesh, 1997; Rich & Sidner, 1998). Recently, intelligent

recommendation systems using artificial intelligence and expert system techniques based on behavioral data have been designed (Ricci & Werthner, 2001; Hwang & Fesenmaier, 2001; Klicek, 2001). However, travelers are often overwhelmed by huge amounts of information online and not able to locate the information they intend to find (Pan & Fesenmaier, 2000). Recent studies of online tourism have confirmed that trip planning on the Web is a frustrating experience (Radosevich, 1997; Stoltz, 1999). One important reason for the usability problem of the Internet as a travel information source is that travel information search is highly dynamic and contingent on information searcher's background knowledge, his/her individual characteristics, search tasks, and stages of trip planning (Jeng, 1999). Furthermore, general keyword based purpose search engines have their limitations: research showed that people use a surprisingly large number of different words to describe the same concept, which makes it difficult for search engines to accommodate different representations (Furnas, Landauer, Gomez & Dumais, 1987). On the other hand, since the Internet possesses the potential for high levels of interactivity and can be customized to a great extent (Newhagen & Rafaeli, 1996), it is able to provide tailored information to users according to their idiosyncratic preferences. Providing the user the right information at the right time could be achieved through Internet technology. Bishop and Starr (1996) argued that a thorough understanding of information search needs to be achieved in order to design customized interfaces. Thus, without a thorough understanding of trip planning and travel information search behavior on the Internet, good tourism information deliverance can hardly be achieved. Therefore, based on the research literature in tourism, consumer

behavior, and information science, the first goal of this research is to explore the structure of information search within the context of trip planning on the Internet.

Satisfaction is one major indicator of success of information technology and information systems (Mahmood, Burn, Gemets & Jacqez, 2000). However, the elements contributing to users' satisfaction are always difficult to capture since there are complex relationships between information content, system structure and individual variables. Recent Human-Computer Interaction (HCI) research views user satisfaction as a mismatch between different conceptual and mental models of designers and users, which is mediated by the information structure of the system (Norman, 1986, 1990; Nielsen, 1993) (Figure 1-1).

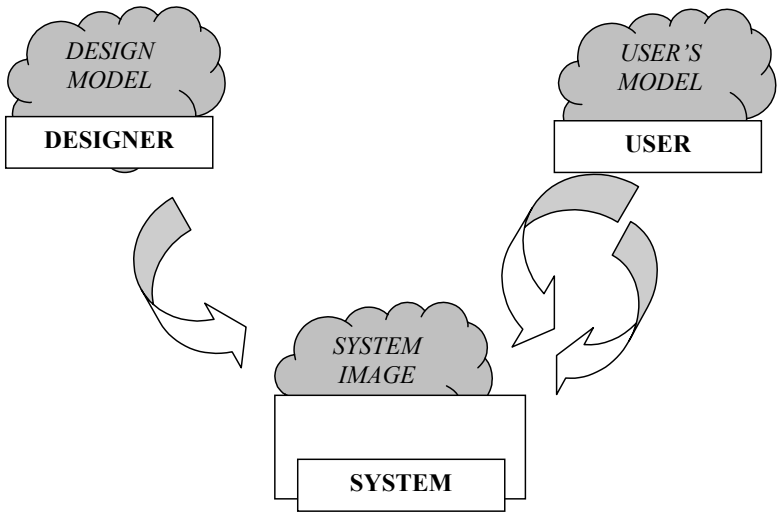

Figure 1-1. Models of Human-Computer Interaction (Norman, 1990)

A mental model is an important construct that can be used to represent different knowledge states of users and designers. However, mental models have been defined differently in different areas. According to Anderson (2000), knowledge can be divided

into two types: declarative knowledge and procedural knowledge. Declarative knowledge represents our understanding of concepts/ideas and the relationships between them; procedural knowledge stands for the knowledge in order to accomplish a task. In other words, declarative knowledge is about "what" and procedural knowledge is about "how". In HCI literature, mental models of users are normally defined through procedural knowledge as the understanding of computer systems in terms of their functions (Norman, 1990). On the other hand, in the communication and information retrieval literature, a mental model is generally defined using a declarative knowledge perspective, as the internal representation of users' background knowledge, which can be represented by maps of concepts (Carley & Palmquist, 1992). The Web is mainly text-based, and Internet browsers have relatively few functions (bookmarks, printing, history list, and back and forward buttons), which are easier to learn and grasp as compared with the time most users spend on the Web. Thus, mental models regarding declarative knowledge plays a fundamental role in online information search. A travel information searcher's mental state includes her/his the background knowledge and understanding of the travel information space. Thus, the mental state can be referred as a semantic mental model and represented by network of concepts/keywords. On the other hand, the Internet is a semi-structured information system which is comprised of an enormous quantity of web sites related to tourism destinations. The information content in this space is maintained by various parties and they have their own specific languages and vocabularies. They may use different sets of concepts and keywords to communicate messages, which are not necessarily congruent with those of the travel information searchers. The concepts and language produced by travel information

providers such as convention and visitor's bureaus (CVB), attractions, airlines, and travel agencies can be described as the semantic model of the travel information space. It is argued that unsatisfactory trip planning on the Internet results, in part, from the mismatch between the semantic model of the travel information space and the semantic mental model of the travel information searchers. Thus, the second goal of this research is to explore the satisfaction of travel information search on the Internet, and how it is related to the degree of congruence between traveler's semantic mental models and the semantic model of the travel information space.

1.2 Research Questions

The Internet as a travel information source has been widely used but research in this area is scarce. How people use the Internet to search for travel information is still unclear. Furthermore, research showed that people are having problems finding information on the Internet. Thus, this study intends to explore the structure of travel information search on the Internet in the context of trip planning and also users' satisfaction. Specifically, this research intends to:

(1) Examine the process and structure of travel information search on the Internet. Jeng (1999) showed that different from other decision making behavior, trip planning is a complex, dynamic, and multi-facet task, including destination, travel partners, transportation, accommodation and other sub-decisions. Following Jeng (1999), it is argued that travel information search on the Internet can be divided into different

"episodes" of which each may include navigation and reading processes (Kim & Hirtle, 1995).

(2) Examine the congruence and discrepancies between a travel information searcher's semantic mental model and the semantic model of the travel information space. Hypertext navigation is made possible through shared knowledge between information searchers and hypertext designers (Bollen, 2001). However, when tourism marketers provide travel information on the Internet, they use specific sets of concepts and keywords in order to market their tourism products. The semantic mental model of a travel information searcher and the semantic model of the travel information space are not necessarily congruent. Exploring the overlaps and differences of these two semantic models can reveal their different perspectives on travel information and the origin of usability problems.

(3) Explore the relationship between the congruence of a travel information searcher's semantic mental model and the semantic model of the travel information space with the levels of users' satisfaction. It is assumed that one's satisfaction depends on whether the travel information searcher is able to find the information s/he is looking for efficiently and with enjoyment. In addition, a traveler information searcher's individual characteristics, including his/her background knowledge on the specific destination, experience of using computers and the Internet in general, and the experience of using the Internet for trip planning in specific, can influence their web search behavior (Hsieh-Yee, 2001). It is expected for users with more travel experience and Internet use

experience, their semantic mental models will be more congruent with the semantic model of the travel information space, and leads to more satisfactory information search process.

In order to address these issues, this study first examined the relevant literature on travel information search, the Internet as a travel information source, navigation behavior on the Internet, and usability problems of the Internet. Furthermore, the appropriate representations of mental models were considered by reviewing the literature in information science and cognitive psychology. The semantic mental models of travelers and the semantic model of the travel information space were obtained using semi-structured interviews and content analysis and the data was analyzed through semantic network analysis (Doerfel, 1998). Concurrent protocol analysis was used to explore the information processing and decision making behavior in the trip planning process. Finally, the implications for designing useful information technology for online tourism were discussed.

1.3 Definition of Terms

Usability: Usability refers the extent to which the travelers can carry out their trip planning and information search task on the Internet effectively, successfully and with satisfaction.

Connectionism: A philosophy and a stream of research originated from cognitive science which believes that human memory, knowledge and intelligence can be modeled using artificial neural network.

Semantic Network: A network composed of inter-connected concepts (nodes) with different distances (strength) between them.

Semantic Mental Model: In this study a semantic mental model refers to the mental structure one constructs when searching for information on the Internet. A semantic mental model represents one's background knowledge and understanding of the Internet as an information source regarding one specific destination and can be represented by semantic networks.

Travel information space: The travel information space refers to all travel related information regarding one specific destination provided by various parties on the Internet.

Semantic Model of Travel Information Space: In this study semantic model of the travel information space refers to the set of concepts and keywords and their inter-relationships used by online travel information providers regarding a specific destination which can be represented by semantic networks.

1.4 Organization of Study

This thesis has five chapters. Chapter II provides a theoretical foundation for the study which incorporates the findings from the research areas of tourism, consumer behavior, and information science, as well as relevant usability research in human-computer interaction (HCI) and information retrieval (IR). Additionally, a conceptual framework of travel information search on the Internet is proposed. In chapter III, the methodology, research design, and research procedures were detailed. Chapter IV presents the outcomes and results of the study. Finally, Chapter V includes a discussion of overall

findings as well as their theoretical and design-related implications. In addition, this final chapter provides a discussion of future research directions.